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Dental Digest

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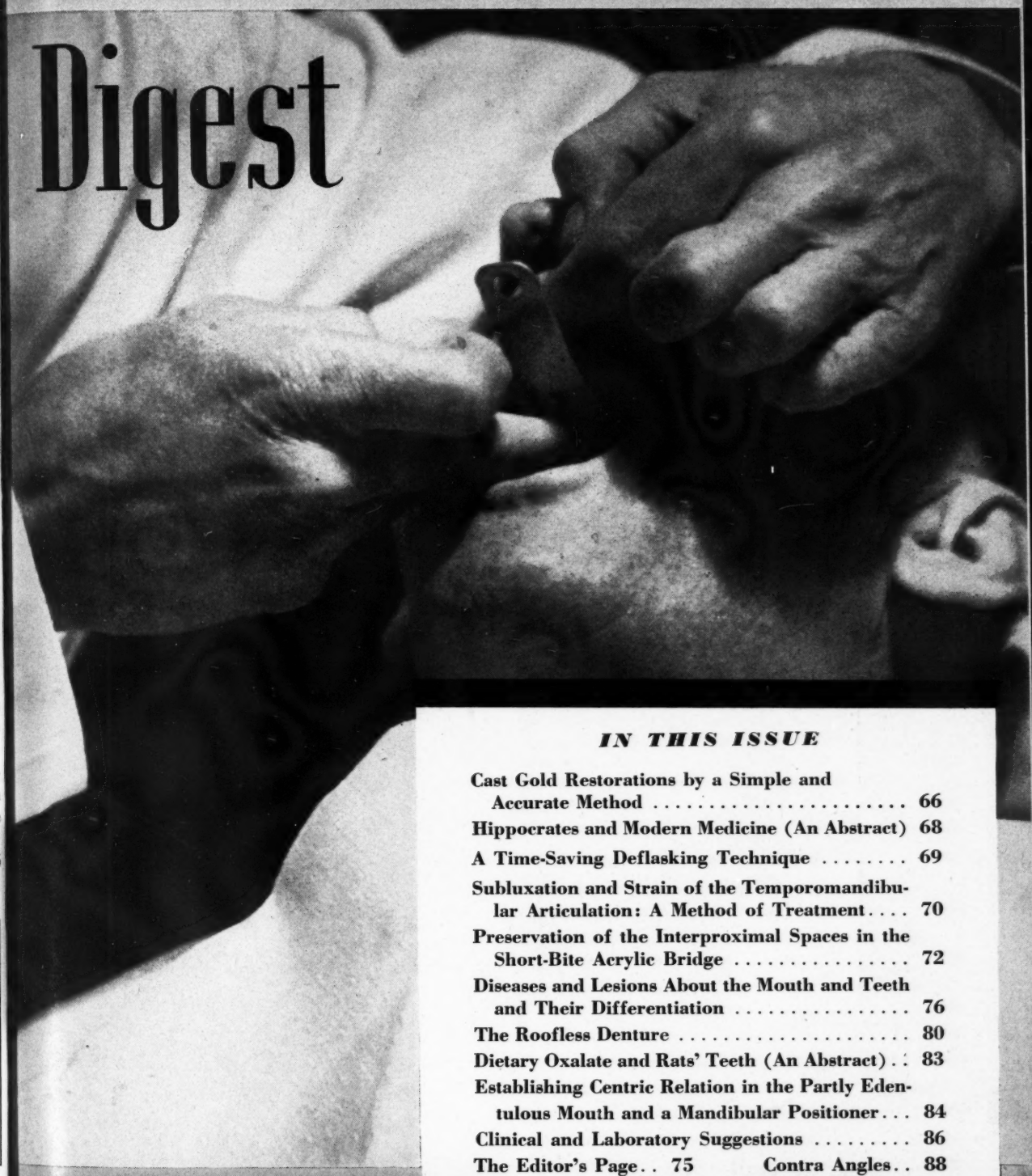

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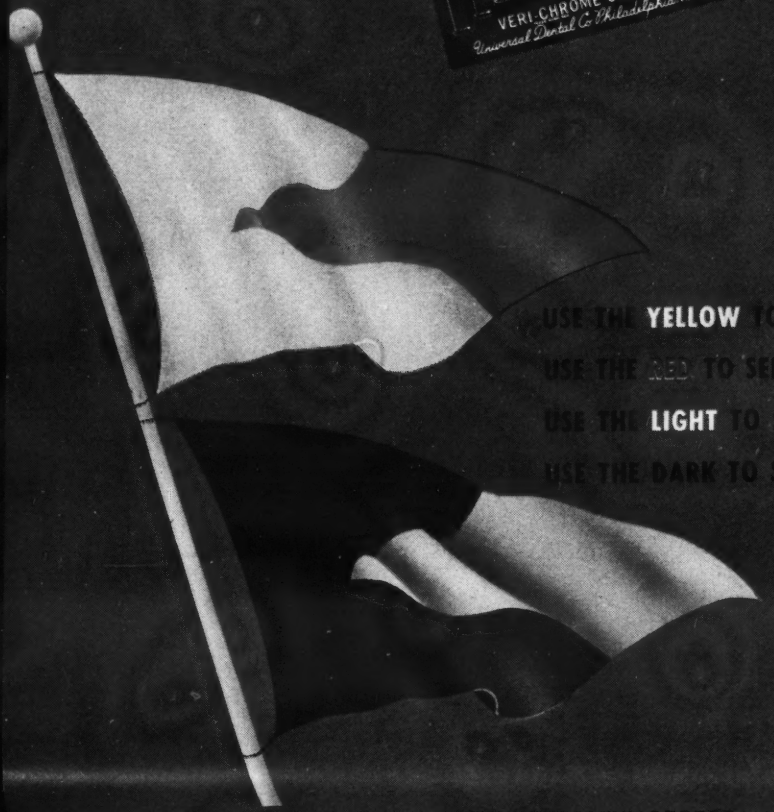

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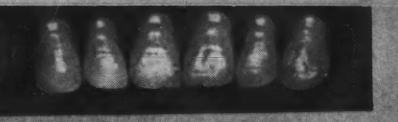

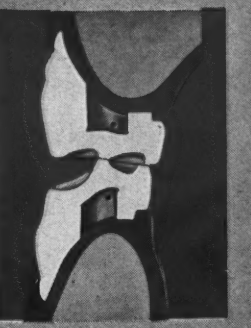

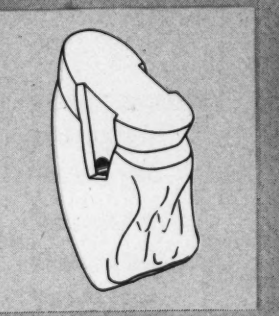

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Vol. 53, No. 2

Dental Digest

FEBRUARY 1947

About Our CONTRIBUTORS

BERNARD J. GARN, D.D.S. (New York University, College of Dentistry, 1943) is the author of CAST GOLD RESTORATIONS BY A SIMPLE AND ACCURATE METHOD in this issue. He is a general practitioner.

LOUIS A. HAWKES, D.D.S. (The University of Pennsylvania College of Dental Surgery, 1902) departs this month from the subject of roofless dentures with which he dealt in the September 1933 and September 1945 issues of the DIGEST. His current contribution is A TIME-SAVING DEFLASKING TECHNIQUE utilized by him with perfect success for three years in the prosthetic phase of his general practice.

ABRAHAM H. TAMARIN, D.D.S. (Chicago College of Dental Surgery, 1917), a general practitioner, previously made several contributions to the periodical literature on bridgework. His article here is a technique for the PRESERVATION OF THE INTERPROXIMAL SPACES IN THE SHORT-BITE ACRYLIC BRIDGE.

HOWARD E. KESSLER, D.D.S. (Western Reserve University, School of Dentistry, 1945) specializes in anesthesia and oral surgery. He is a member of the American Society of Anesthesiologists and the International Anesthesia Research Society. SUBLUXATION AND STRAIN OF THE TEMPOROMANDIBULAR ARTICULATION: A METHOD OF TREATMENT is the first appearance of an article by him in the DIGEST.

BAROOK J. MASUDA, D.D.S. (The Thomas W. Evans Dental Institute, University of Pennsylvania, 1930) a general practitioner, is chief of the dental department at Women's Hospital, Philadelphia. The DIGEST this month includes a significant discussion by him entitled, DISEASES AND LESIONS ABOUT THE MOUTH AND TEETH AND THEIR DIFFERENTIATION.

EDWARD A. REYER, D.M.D. (Tufts College Dental School, 1935) is a prosthodontist. His first DIGEST article was published in March 1945 when he was Lieutenant Edward A. Reyer (DC) AUS. In this issue he highlights the fine points of producing a retentive, stable, and psychologically acceptable ROOFLESS DENTURE. Samuel Gruskin, D.D.S., Brooklyn, assisted with the photography.

THOMAS O'D. LEGGE, D.D.S. (Royal College of Dental Surgeons, Toronto, 1924), a member of the Canadian Dental Association, presented in detail in last month's issue an original technique for establishing centric relation in the edentulous mouth. This month he describes how the mandibular positioner used in that technique may be employed in ESTABLISHING CENTRIC RELATION IN THE PARTLY EDENTULOUS MOUTH.

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EDWARD J. RYAN, B.S., D.D.S., Editor
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CAST GOLD RESTORATIONS

by a Simple and Accurate Method

BERNARD J. GARN, D.D.S., NEW YORK CITY

DIGEST

Each of the most frequently used techniques for producing inlays and other cast gold restorations has objectionable features. These can be avoided by adopting only the best features of each technique and modifying them so that they may be integrated in one composite technique. Thus incorporated, they constitute a procedure which is both simple and accurate.

The rationale of the method given is made apparent by a listing of the advantages and disadvantages of the three techniques contributing to the combination and by a brief but graphic comparison of the original techniques with the combination arising from them.

THE COMMONLY used techniques for making cast gold restorations are: the "direct," the "indirect," and the "indirect-direct."

The "direct" technique is probably the one that yields the most accurate results; however, it possesses several drawbacks. These are:

1. The extended time required at the chair to finish the wax-up in the mouth.

2. A carving generally inferior to one made on a model.

3. A tendency toward distortion of the pattern in removing it from the tooth (especially when it involves a slice, an onlay, or a thin channel).

The "indirect" and the "indirect-direct" techniques have the advantage of saving chair time, yielding beautiful carvings, and producing little distortion (since the tube or tray and the great bulk of material will prevent delicate features from being distorted); however, these techniques, too, have serious drawbacks. These are:

1. The introduction of an over-all error because of dimensional changes in the materials used for the impression, the model, the wax-up, and the casting.

2. The considerable time and/or expense involved in making dies and models that will provide a registration of the occlusion and contact points.

3. The possibility of distortion in removing a delicate wax-up from the model or from the tooth.

By modifying and recombining the most desirable features of these commonly used techniques, it is possible to produce inlays and other cast gold restorations of the utmost accuracy while circumventing the disadvantages inherent in these customary procedures.

Procedure

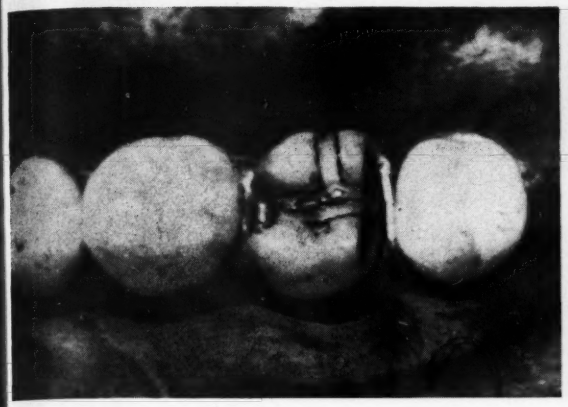
1. The tooth is prepared (Fig. 1) in the usual fashion and a copper band of suitable size is annealed and fitted. The band should extend below the gingival margin in all prepared areas, and it should be trimmed above undercuts in all unprepared areas.

2. With the copper band in position on the tooth, the level of the occlusal plane is marked on it with a sharp instrument. The band is trimmed occlusally and reseated. It should now be clear of the antagonistic teeth in centric occlusion (Fig. 2).

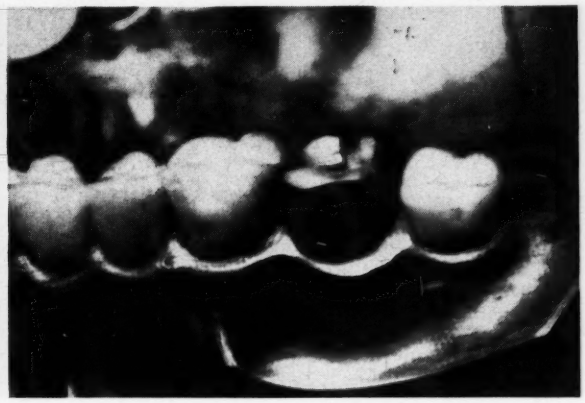
3. The band is removed and filled with softened blue inlay wax. The gingival half is flamed thoroughly and luted to the margins of the band with a hot plastic instrument.

4. The wax-filled band is seated on the tooth (Fig. 3). By exerting pressure on band (not the wax), it is depressed to its proper position. The patient bites in centric. This drives the harder occlusal wax down into the band, producing a well condensed internal pattern; it also provides a registration of the occlusion and contact points (Fig. 4).

5. An occlusal pattern is carved, the wax chilled and removed. If the internal pattern is not satisfactory, a

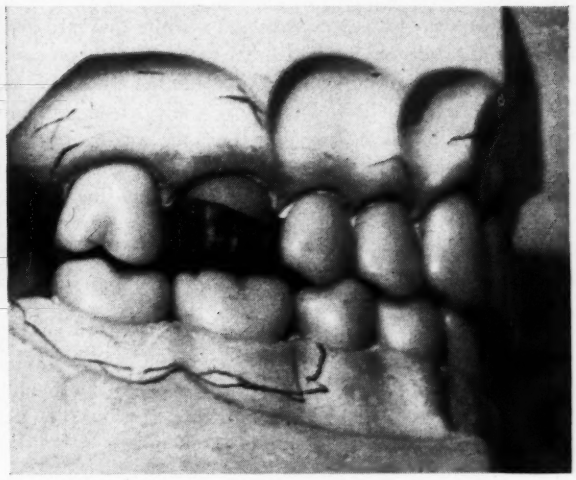


1. *MOD preparation. Distal slice and lingual extension.*



2. *Copper band in place, trimmed free of occlusion.*

3. *Copper band filled with wax and seated on tooth.*



4. *Right: The centric bite condenses wax inside pattern and establishes correct occlusion and contact points.*

little molten wax may be placed inside and the band reseated.

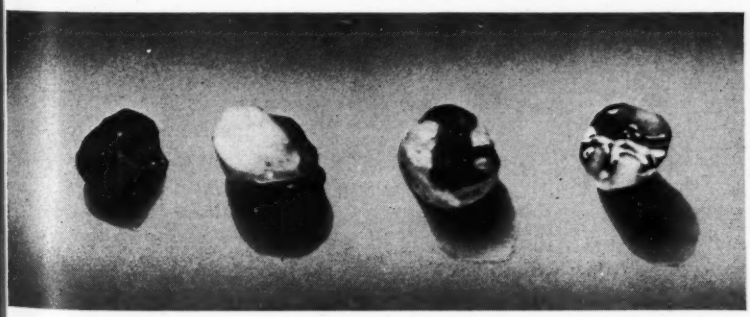
6. The wax-filled band is now boxed with 22-gauge sheet wax, the inside is painted with debubblizer, and a model is poured with a heavy mix of model investment material (Fig. 7).

7. When the investment has set, the boxing wax and the copper band are carefully trimmed away with a sharp instrument (Fig. 8). (No heat need be used as the blue wax must be left intact on the model.)

8. Running a hot plastic instrument over the approximate area of the margins will cause the investment to show through the wax where there is an excess. This excess is now trimmed away with a Bard-Parker blade, and the wax-up is virtually finished (Fig. 10). The addition of the slightest amount of wax at the contact point (to make up for the thickness of the copper band) and the use of cocoa butter or sweet almond oil on a pellet of cotton to impart a sheen to the wax will yield a beautifully finished wax-up.

9. The wax-up (still on the model) is now sprued, invested, and cast in the usual manner.

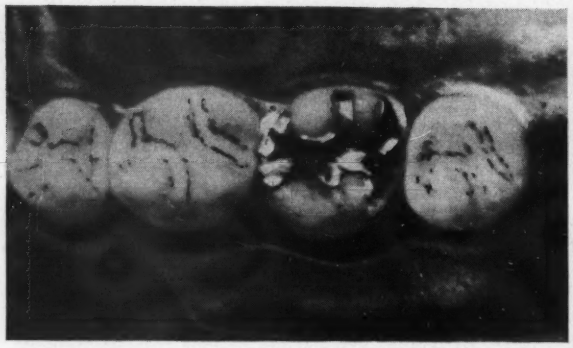
10. The castings obtained in this manner require little finishing. A high lustre may be imparted by using a rag wheel with rouge; the remainder of the finishing should be done in the mouth.

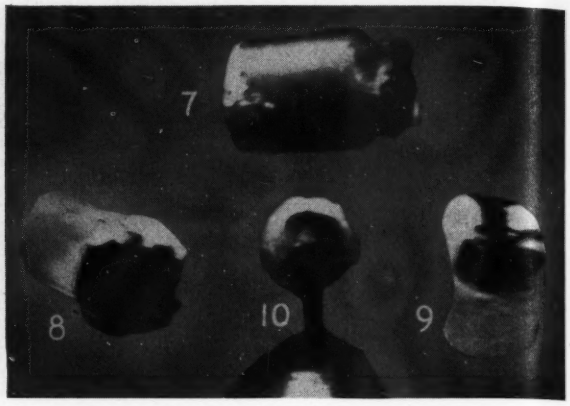


5. *Wax impression; model poured; wax-up finished; and completed casting.*

Conclusions

Comparisons—It seems evident that this technique succesfully avoids the pitfalls of the procedures in common





6. ***Completed casting in position on tooth.***

usage. While the operator who applies the "direct" technique is just getting ready to cut away his copper tube and begin the difficult carving and finishing of the wax-up in the mouth, only, perhaps, to have a delicate lingual extension crack off as he removes the wax-up from the tooth, the dentist using the composite technique is removing his pattern safely, knowing that the strength of the copper band and the bulk of the wax will maintain the slices, onlays, or narrow channels, whole and undistorted.

And while proponents of the "indirect" or "indirect-direct" techniques are pouring dies of questionable dimensional stability into impressions that are very often not as accurate as those made with blue inlay wax, and while they are getting ready to pour and articulate models or return them to the mouth for try-ins and then, finally, risking distortion by removing the wax-up from the model or tooth, those using the composite technique are pouring one model in compensating investment material and then casting directly against that model.

Applications—While this method is adaptable to most applications, a simple occlusal, mesio- or disto-occlusal inlay can probably be done better by the "direct" method. And full and three-quarter crowns may be done equally well by an "indirect-direct" or "indirect" technique. But for MOD inlays, for slice restorations, for inlays with onlays, for any inlay with narrow buccal or lingual extensions or a narrow occlusal channel, this method should be a valuable addition to the list of procedures used by the dentist.

57 *East 57th Street.*

Laboratory Procedure

Model poured (Fig. 7); wax boxing and copper band removed (Fig. 8); wax trimmed (Fig. 9); model trimmed and wax-up prepared for investing (Fig. 10).

Hippocrates and Modern Medicine

MEDICINE AS a science has tended, in this day of laboratories and technical aids, to displace medicine as an art. The importance of mastering the clinical art is not fully appreciated; yet without it the patient, who may be old or very young, feeble, or neuropsychiatrically inadequate, is often exhausted and terrorized by routine examinations. A full knowledge of the patient as an individual, of his social surroundings, of the effects of illness on his work, ambitions, family, and finances are all necessary to treat him properly.

This significant statement appeared in a recent article published by the National Board of Medical Examiners: "I [Doctor Egon E. Kattwinkel] have been impressed, in observing the students under my care, with a real deficiency in their knowledge of what constitutes the art of medicine. They are imbued with a hot devotion to the science of their profession, showing keen interest in the technique of diagnosis with special emphasis on laboratory and other technical aids; but when questioned about the social history of the patient or the minute details of treatment on which the practice of the care of the patient so often depend, they answer in generalities that indicate a lack of an appreciation of the importance of such knowledge."

One of the greatest clinicians of all time, Thomas Sydenham, emphasized the importance of a knowledge of humanity on the part of the physician by stating that the best book for a doctor to read was DON QUIXOTE. Another master clinician, Doctor Will Mayo, said, "Before you do anything to a patient, ask yourself if it is what you would want done to you if you were the patient."

The art of medicine is not easily learned. It takes natural inclination and it takes experience. Some are peculiarly fitted to be physicians. They have tact, courtesy, and a kindly and sympathetic interest in people. Example and training, however, are needed, and much of this was obtained in the old preceptor method of teaching which the impersonalized science of our present medical schools does not replace.

—From Editorials, *Naval Medical Bulletin* 46:1729-1730 (November) 1946.

A Time-Saving DEFLASKING TECHNIQUE

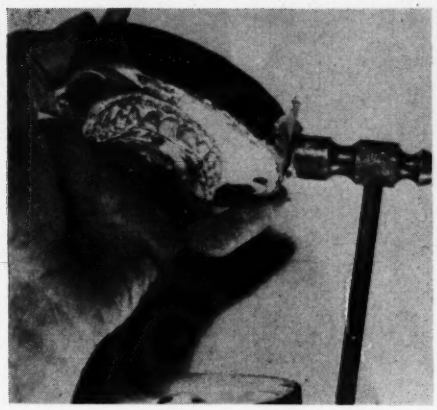
LOUIS B. HAWKES, D.D.S.,
PITTSBURGH

DIGEST

This technique describes a simple procedure for removing the denture from the flask.

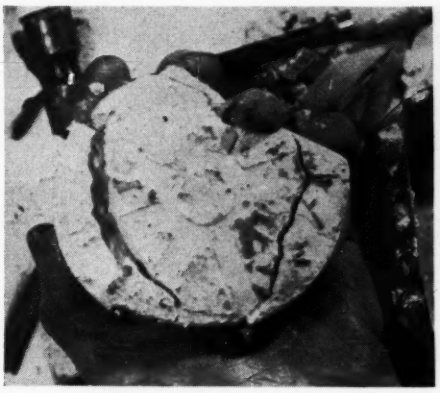
1. *The old method of cutting and prying is entirely eliminated in this technique; thirty minutes of irksome effort can be reduced to ten seconds of hard hammer stroking.*

307 *Granite Building.*

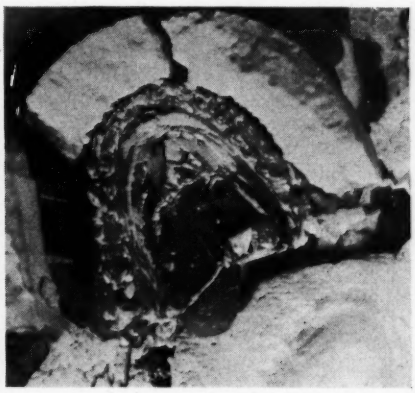


2. *Hammering the side of the flask (Hanau type) while it is held in the hand with the denture face down, sets up a vibration of the metal. The investment absorbs this vibration which produces fracturing of the plaster.*

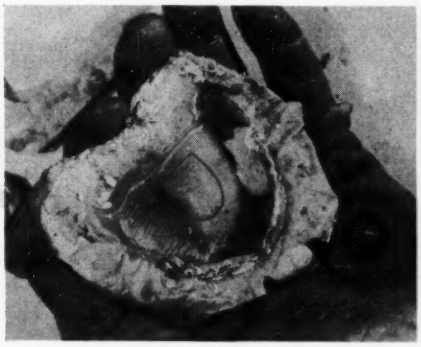
3. *Ten or twelve hard raps, begun on one end of the flask and continued around the side until the contents drop into the hand, are sufficient. (Distortion of the flask is negligible, amounting to about ⅛ of an inch; the same flasks are still being used after three years' of such handling.)*



4. *The investment has dropped into the hand; fractures are apparent.*



5. *Fractured investment being removed.*



6. *Case reversed with model lifted out.*

7. *The denture is recovered ten seconds after start of the deflasking procedure.*

SUBLUXATION *and* STRAIN *of the Temporomandibular Articulation: A Method of Treatment*

HOWARD E. KESSLER, D.D.S., SAN DIEGO*

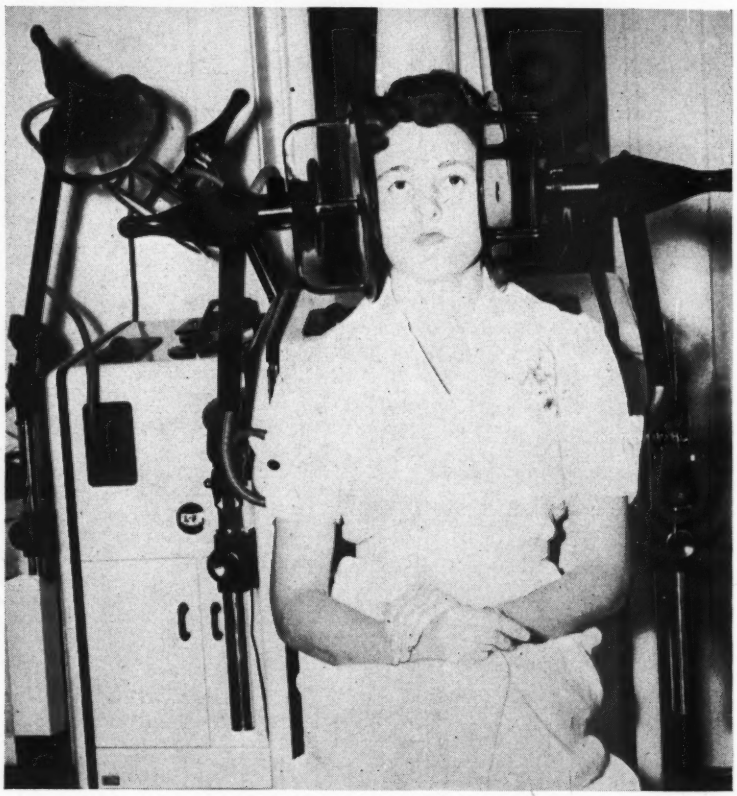
DIGEST

Stimulation of the circulation in the involved ligaments underlies the logical method of treatment for pain in the temporomandibular articulation. Air conduction short wave therapy in which a plate is positioned next to each temporomandibular joint relieves the congestion, carries off waste products, and thereby eliminates pain. Directions are given for this type of therapy.

COMPLAINTS OF pain in the temporomandibular articulation are regularly made to dentists. The pain radiates back into the ear. It is usually due to strained ligaments in the joint and is generally brought about by subluxation of the temporomandibular articulation. The involved ligaments are, principally, the ones attached to the head of the condyle.

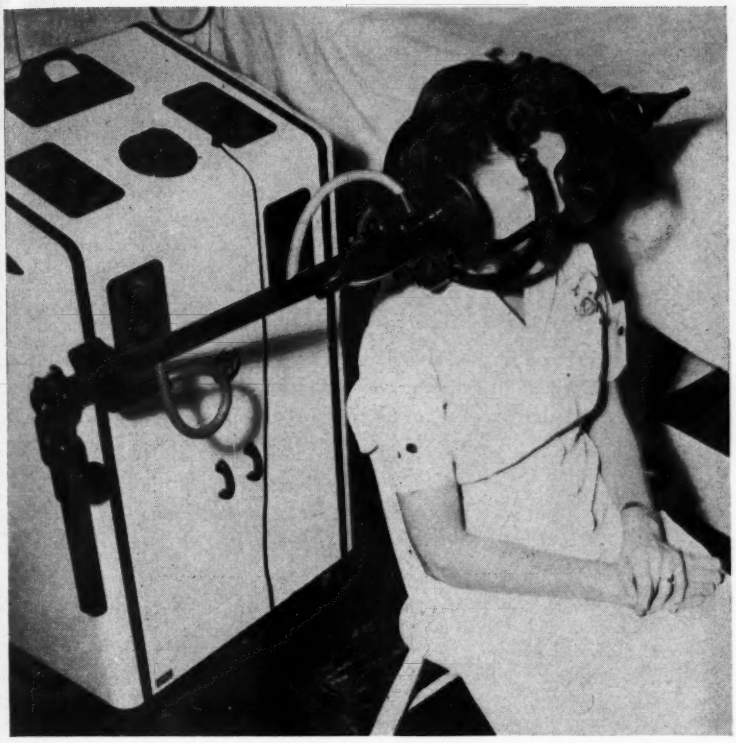
Subluxation of this type is sometimes due to excessive strain on the mandible during extraction of the lower posterior teeth. That this is not always the case, however, is indicated by the fact that many patients with pain attributable to subluxation have never had a tooth extracted. It may be that a subluxation is still present when the patient complains of pain. Nearly every dentist knows how to apply both of his thumbs over the lower molar teeth (a little to the buccal so that his fingers are not pinched when the strong masticating muscles snap back) and push down on the mandible so that the head of the condyle jumps back over the eminence it is in front of.

In this hospital a number of cases of subluxation and strain have been treated with air conduction short wave treatments.



1. ***Front view with electrodes in position.***

*Resident in Anesthesia and Oral Surgery.



2. ***Lateral view with electrodes in position.***

Treatment Procedure

1. The small two to three inch electrode discs (this size comes with the machine) are placed two or three inches from the skin surface. (If the short wave treatment is to be concentrated on one side only, the opposite electrode is placed further away. For instance, the active electrode is spaced one inch away and the inactive electrode three inches away from the skin surface. This distance may vary with the type of machine used. If the strain is present on both sides, the electrodes are spaced equidistant from the skin surface.)

2. Treatment is begun with an exposure of from twenty minutes to one-half hour. The period is increased gradually to forty-five minutes unless, of course, there are contraindications such as dizziness and other peculiar sensations on the part of the patient.

3. This treatment is usually given daily for about five weeks. Satisfactory recovery has always been accomplished. (Even though the dentist sends the patient to a physiotherapist for the treatment, he should specify the amount of exposure.) We have experimented and found that it was better to give a concentrated course of treatments than to give, for instance, an exposure every third day for a period of two months or more.

The principle of the treatment is to bring about sufficient hyperemia in the involved area to relieve the congestion and carry off the waste products secondary to the strain. The treatment is available in most cities and seems to meet a prevalent and quite serious problem.

Comments

Probably the most common treatment for this condition is the application of hot packs. This method, however, is quite useless because it is too superficial. Long wave, low frequency current therapy was formerly used. Little tin plates were cut out for electrodes to apply over the temporomandibular articulation. The advantage of this method over the use of the short wave, high frequency current was that the treatment was more concentrated over the joint. The short wave method seems to be more desirable because (1) it is much easier to use, and (2) there is much less danger of burning the patient.

San Diego County General Hospital.

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We hope that you will accept this invitation!

PRESERVATION *of the* INTERPROXIMAL SPACES

in the Short Bite Acrylic Bridge

A. H. TAMARIN, D.D.S., Chicago

DIGEST

A cast gold base is indicated for the short bite acrylic bridge if the maximum esthetic and hygienic qualities as well as strength are desired. This base should have an equal distribution of thickness; there should be no weak spots due to the formation of the interproximal spaces. On the other hand, the interproximal spaces are essential in such bridges for hygienic purposes. Directions for constructing a bridge with a cast gold base which conforms to these high standards of strength, hygiene, and esthetics are contained in the technique presented here.

Objections to Rods

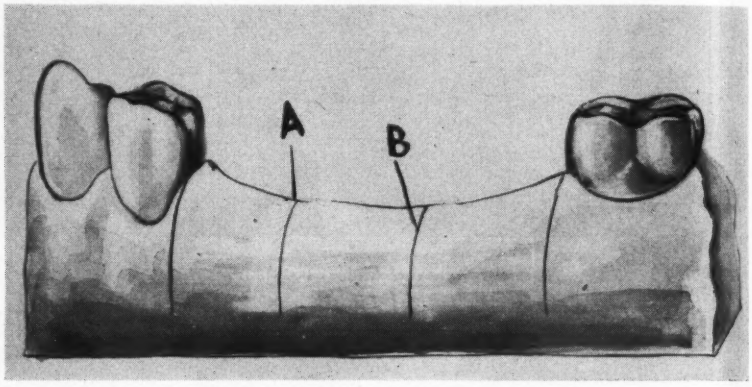
IN SHORT BITE acrylic bridges where three or more teeth are involved, it is not advisable to have a rod of any kind serve as a skeleton.

1. A rod serves to divide the acrylic in half and thereby weakens the bridge.

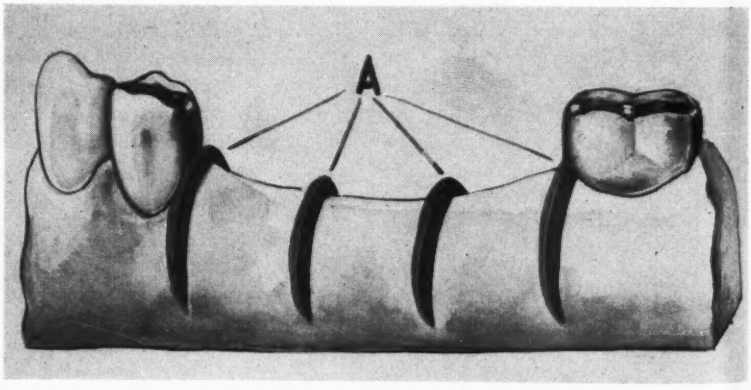
2. The use of a thin rod for a big span, regardless of the toughness of the material involved, will not stand up under the stress and force of mastication.

3. If a thicker rod of the same material is employed, it will occupy too much space, at the expense of the acrylic material.

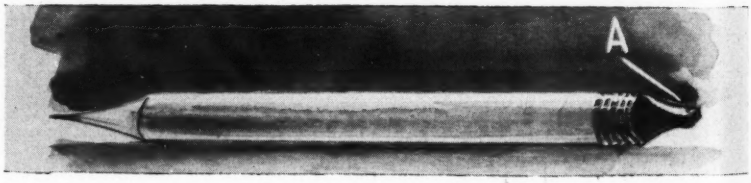
a) The amount of acrylic material on the occlusal surface will not be sufficient or strong enough to withstand the force of mastication.



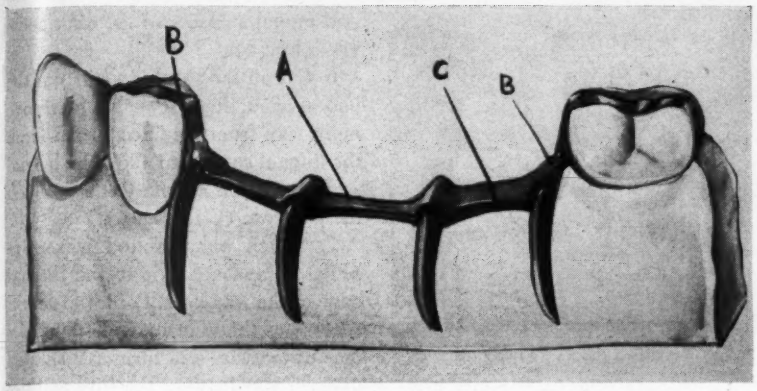
1. *Lines (A, B) indicating the number of interproximal spaces necessary and where they are located.*



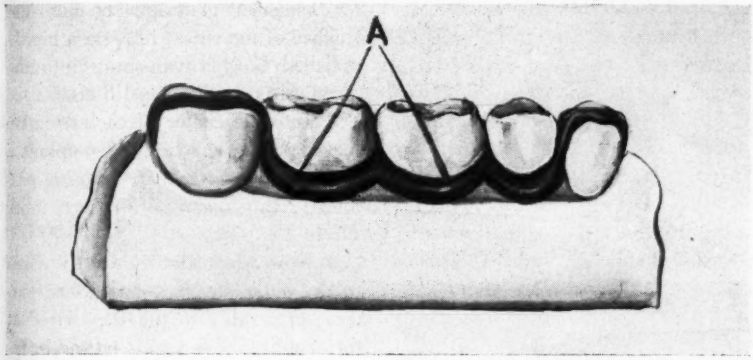
2. *Roof-like elevations (A) for the creation of interproximal spaces.*



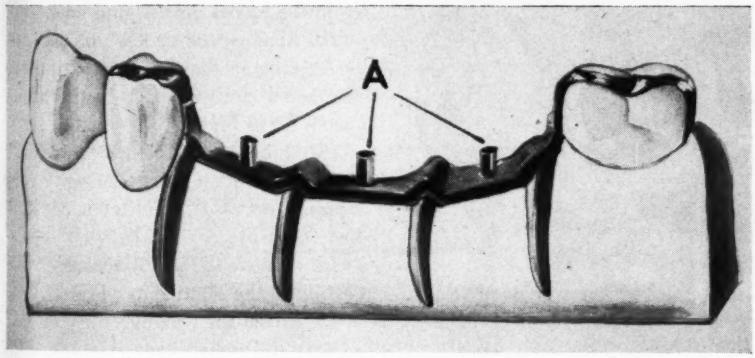
3. *V-shaped eraser for the purpose of adapting the baseplate wax over the ridge of the model.*



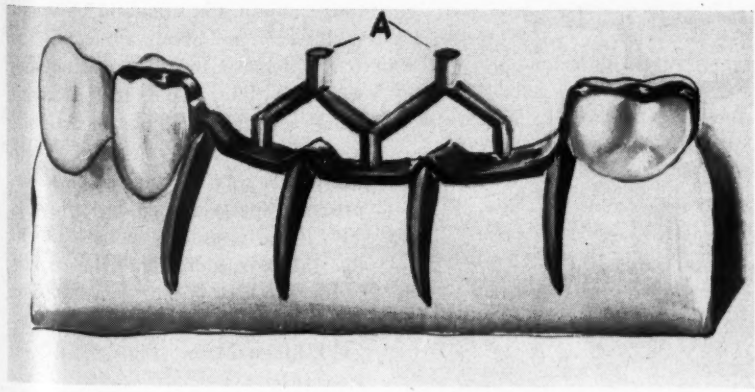
4. *Baseplate wax adapted over the ridges reproducing interproximal spaces.*



6. *Wax wire (A) adapted to lingual edge of wax base with flat surface on exterior.*



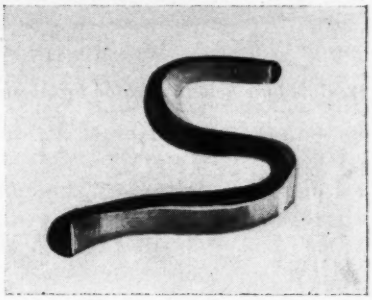
7. *Wax base plus center points (A).*



8. *Adaptation of wax sprues (A).*

b) The indentation onto the acrylic material in the gingival area, where the interproximal spaces are supposed to be, will further weaken the bridge and render it impractical.

The following technique for constructing a short bite acrylic bridge preserves the interproximal spaces without sacrificing good esthetics or strength.



5. *Half-round wax wire.*

Technique

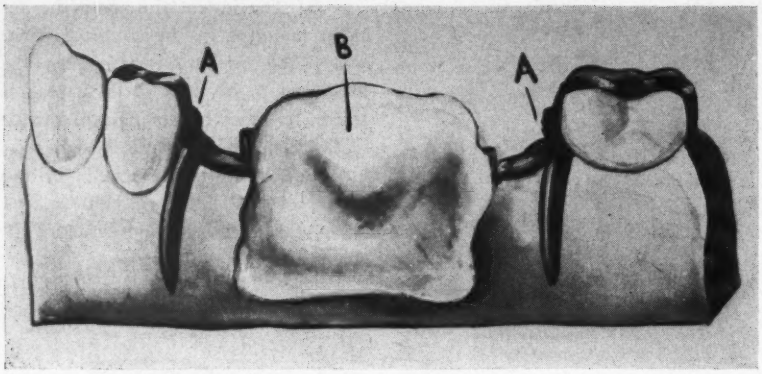
1. Take an impression in plaster with the abutments in position and make a cast using a hard investment compound.

2. With a pencil, mark off on the cast the interproximal spaces which are to be reproduced. Draw a line over each mark buccolingually (Fig. 1).

3. In a small container, make a thin mixture of the same investment compound used for the cast. Dip into this investment compound the pointed side of a straight wax spatula, apply the spatula to the cast, and form elevated lines over the traced areas. Let these elevations crystallize and shape them into roof-like lines (Fig. 2); they represent interproximal spaces.

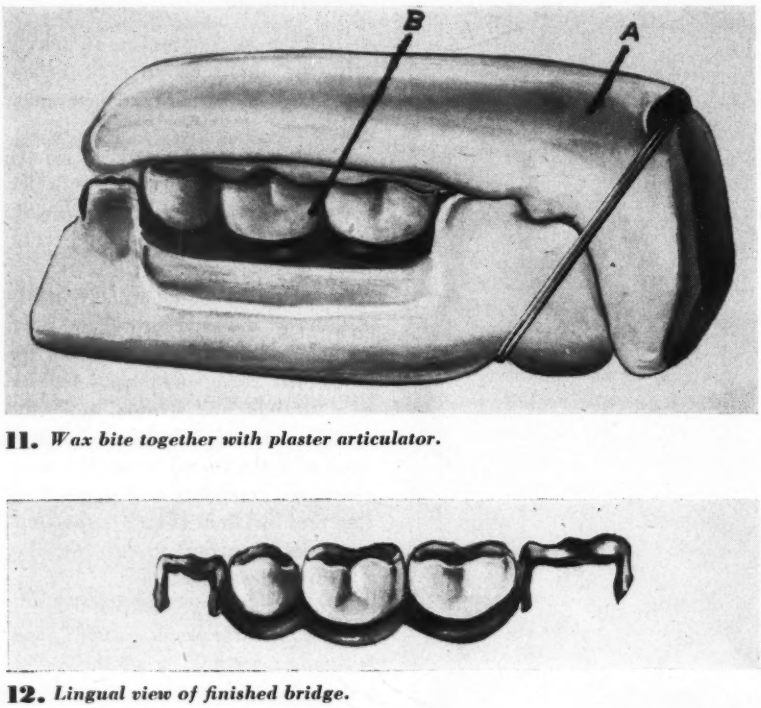
4. Wet the model.

5. Cut a strip of baseplate wax 1 millimeter in thickness, soften it, and with an eraser holder (on the end of a pencil) which has been shaped to a V (A in Fig. 3), adapt the wax over the ridge of the model (A in Fig. 4). Include the elevated lines of the investment compound which are to form the interproximal spaces. The thickness of the wax should not be distorted anywhere; such distortion would leave weak spots. The wax should also overlap slightly the distal

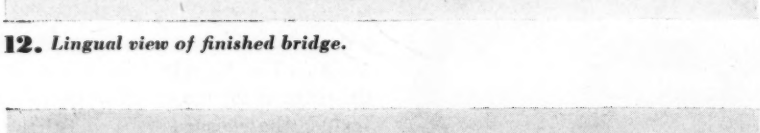


9. *Gold base held in position by investment compound.*

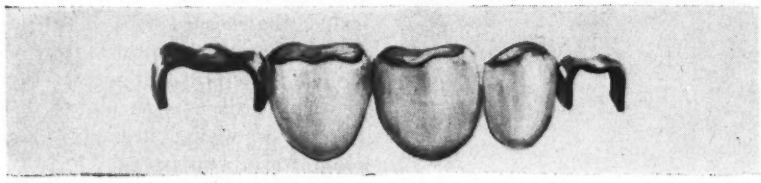
10. *Gold base soldered to abutments.*



11. *Wax bite together with plaster articulator.*



12. *Lingual view of finished bridge.*



13. *Buccal view of finished bridge.*

and mesial surfaces of the abutments (B in Fig. 4).

6. Cut off the surplus wax from the buccal and lingual sides. Remove more wax from the buccal than from the lingual surface to allow the buccal surfaces of the acrylic teeth to touch the gingivae (C in Fig. 4).

7. Soften a half-round wax wire (Fig. 5) and adapt it to the lingual edge of the wax base. Point the round surface of the wire inward. This surface of the wire will form a V-shaped undergroove between the wire and the base, which will serve as a retention for the acrylic material. The outer flat surface of the wire will form a highly polished border, vanishing into the acrylic teeth (A in Figs. 6 and 12).

8. Into the center of each area reserved for an acrylic tooth implant a straight round wax wire running parallel to the long axis of each tooth (A in Fig. 7).

9. Now adapt and unite wax wires to the outer surface of the wax pattern, preferably to the wax wires at the center of each proposed tooth, into one or two common sprues (A in Fig. 8). Remove the wax pattern from the model, invest, and cast.

10. Remove the excess gold. Place the casting in the proper position on the model and wax it up to the abutments (A in Fig. 9).

11. Place investment compound over the center of the casting, overlapping the model, and let it crystallize (B in Fig. 9).

12. Remove the wax, and solder the casting to the abutments (Fig. 10).

13. Pickle the casting; then grind, adjust, and polish it.

14. Place the casting into the patient's mouth. Put some soft baseplate wax over it, and obtain a bite.

15. Remove the casting, together with the bite, from the patient's mouth and cast some plaster articulators (A in Fig. 11). Carve the teeth out of the wax bite using the interproximal spaces as a guide (B in Fig. 11). Remove, process, polish, and fit the finished product into the mouth.

16. The case is now ready for cementation.

17. Lingual view (Fig. 12). Buccal view (Fig. 13).

3460 *Lawrence Avenue.*

THE EDITOR'S PAGE

So MANY PEOPLE in modern life have anxieties and nervous tensions. Many of them are observed in the dental office and their basic anxiety is aggravated by the dental experience or by the contemplation of the dental experience. Often we have disposed of these people by affixing the label "neurotic" or "hypochondriac." This labeling may have been a cloak to cover our own ignorance of psychologic states and a convenient device to place the blame on the patient for an unfortunate interpersonal relationship.

A number of patients who present the anxiety syndrome complain of vague pains and bodily distresses. In the evaluation of many of these aches and pains, we are required to think in terms of possible dental infection. If we are to be skillful diagnosticians, it is essential that we be able to distinguish with facility between so-called organic and functional disease although this differentiation often requires consummate skill.

The vast new field of psychosomatic medicine is concerned with this differentiation. The fundamental tenet, however, of psychosomatic medicine is that with every organic or structural disease there may be a psychologic component and that with every psychologic stress there may be expressions in bodily organs. For example, a peptic ulcer, a definite, demonstrable tissue lesion, may often be induced by emotional stresses and strains. The sufferer from peptic ulcer in turn may show signs of anxiety, irritability, and alterations of temperament.

There is, actually, no separation of mind and body. That which distresses our mind affects our body structure and our body functions. That which troubles our physical organs and tissues is reflected in personality traits and changes. Every person, when he is sick in body, regresses to lower levels of behavior and frequently people who are distressed in spirit show their distress by the signs and symptoms of physical disease.

Hinkle enumerated these symptoms that characterize the anxiety syndrome:[1]

Headache: This is common in the anxiety state. It expresses itself as constricting or squeezing. It may involve any part of the skull.

Precordial or presternal pain: This is also a common symptom. The patient describes the pain as "sticking" or "constricting." It is usually localized over the apex of the heart. It is not severe but it is recurrent and alarming. Sometimes it is described as "all over the left side." It almost never radiates in the manner of angina pectoris and it is never related to exercise; in fact, exercise often will abolish it. Patients often complain of a "feeling of gas around the heart." In addition, they frequently say they have "pounding of the heart," which is generally noticed after slight exertion but classically occurs just after they have gone to bed. When a man says, "Doc, I can't go to sleep because my heart pounds, and I can't lie on my left side at night because it bothers me so," the complaint is almost pathognomonic.

Respiratory Symptoms: People in the anxiety state frequently have sighing respirations, describe difficulty in breathing, dizzy spells, and occasional fainting.

Epigastric distress: This is the most common single initial complaint among people in the anxiety state. Hinkle describes this condition in these words: "Usually it is described as a 'burning' or 'gripping' pain, located in mid-epigastrium, and usually, but not always, postprandial in occurrence.

Quality of sleep: Anxiety-ridden patients sleep poorly. They complain of nightmares and wild dreams. Universally they have morning fatigue. This morning fatigue, which is frequently accompanied by weakness, wears off as the day progresses, leaving the patient feeling all right in the afternoon.

Physical findings: The physical examination of the person with an anxiety syndrome reveals the following: ". . . an unhappy and worried man, with a generally hyperactive autonomic nervous system. . . . There is a fine tremor of the outstretched hands; the palms are moist and clammy; there is axillary sweating, even in a cold room; the pulse may be very rapid, but usually it is about 80 or 90, and of small volume. Sighing respirations may be seen. Epigastric tenderness often appears in those who complain of epigastric pain, and a spastic colon can be palpated in some who have spastic constipation. Hyperactive deep reflexes appear about half of the time."

It is a fact that organic disease may present some of these same complaints. It is highly important that, before the label "anxiety syndrome" is given to a state, all physical disease be ruled out of the clinical picture.

[1]Hinkle, L. E., Jr.: Neuropsychiatric Problems on a Battleship, U.S. Nav. Med. Bull. 46:1813-1822 (December) 1946.

DISEASES *and* LESIONS *about the Mouth and Teeth and Their Differentiation**

B. J. MASUDA, M.S., D.D.S., PHILADELPHIA

DIGEST

Systemic diseases often manifest themselves as oral lesions or diseases which dentists may diagnose erroneously as localized oral conditions. By citing the possible origins of these conditions and the imitative nature of many, this article calls attention not only to the importance of differentiating the various oral diseases and lesions from each other but also from those of systemic and constitutional origin. It is suggested that in the field of oral and circumoral diseases and lesions, the collaboration of the internist and the dentist may be required more often than in any other field of medicodental problems; for the internist can interpret oral findings in terms of their systemic significance if any relationship exists here.

Syphilis

*Read before the staff of the Lima Memorial Hospital, Lima, Ohio.

THE DIAGNOSIS and management of the many lesions and diseases which may occur in or around the mouth are of importance to every dentist and physician and require careful study. Without a thorough understanding of the pathology of a disease, it is incomprehensible that that disease can be diagnosed accurately or that its treatment can be intelligently undertaken.

The dentist, the otolaryngologist, and the dermatologist no doubt possess valuable judgment by virtue of their observations, training, and background of clinical experience. As specialists, on the other hand, they may not always be able to evaluate the relationship between oral findings and their full systemic significance. There are probably no medicodental problems requiring more the cooperation of these specialists, particularly the oral surgeon, and the internist than certain infections of the oral mucous membrane, gingival tissues, and bone-supporting structure of the teeth.

1. ***Mucous cyst (mucocele). This round, mucous retention cyst of the lip appeared in a medical student, aged 26. It was a somewhat movable, thin-walled swelling filled with clear fluid and was caused by the blocking of the duct of a mucous gland. It was nonmalignant. The treatment consisted of complete enucleation. (If remnants of the epithelial lining are left in these cases, the cyst will recur.)***

2. *Leukoplakia of the dorsum of the tongue in a man, aged 37. The lesion presented a white, leathery, hornified, and elevated surface. The patient gave a history of excessive smoking of cigarettes.*

3. *Geographic tongue in male patient. It was characterized by reddish, smooth patches with slightly elevated, yellowish borders which spread over the dorsal surface of the tongue.*

Although the etiology is not known, debilitated individuals are more susceptible to this disease than others. Recurrence of the disease is common; it may be quite persistent. Regulated diet and local ointments of boric acid and balsam of Peru have proved satisfactory in its treatment.

4. *Actinomycosis in a man, aged 38, which began six weeks previous with tenderness of the gingivae and a pulpitis. It manifested itself as a chronic swelling of the jaw, increased heat, tenderness, and multiple fistulae.*

On microscopic examination the discharge was found to contain sulfur granules and a rosette-like network of mycelium and rays; wet and Gram-stained preparations were positive for actinomycosis; and roentgenologic examination determined that no bone was involved.

Treatment consisted of intravenous injections of 100,000 units of penicillin daily for sixteen days, a total of 1,600,000 units. Hot wet compresses were also applied to the jaw during most of the time. Recovery was complete. (This disease is a source of potential danger from infection to physicians and dentists themselves.)

Diagnostic Problems

As the mucous membranes of the mouth and the skin have, embryologically, analogous structure, the dermatologist is sought many times to assist in diagnosing and treating diseases of the oral and circumoral areas. For even the experienced clinician often finds the lesions and tumors in these regions difficult to diagnose (Figs. 1 and 2). This is partly because the oral mucous membrane is constantly being traumatized by the following factors: (1) ingestion of varieties of food, (2) mastication, (3) heat, moisture and bacteria constantly present in the oral cavity. All of these produce changes in the lesions and give rise to an entirely different clinical picture than the one presented by the same lesions and tumors occurring on the skin (Fig. 3).

Stomatitis (Vincent's Angina)

5. *Primary syphilis (chancre). The lesion appeared on the lower lip of a man aged 52. It was round, painless, and elevated; involved the deeper structures; and had a flat, red, ulcerated surface with adenopathy and some discharge. Dark field illumination revealed the presence of Spirocheta pallida.*

6. *Secondary syphilis (mucous patches). This man gave a history of exposure eleven weeks before he was seen as a patient. The lesions appeared on the inner surfaces of the lips; on the edges, under, and on the dorsum of the tongue, the uvula, and the palate. They were large, irregular plaques of a grayish-white color covered by a sticky secretion. The patient complained of a sore throat, fever, headaches, and general malaise. Wassermann positive.*

Herpetic lesions of the oral mucosa and lips, for example, which may be the result of gastrointestinal disturbance, sometimes resemble diphtheria or mucous patches of secondary syphilis; erythema multiforme may also present a problem in diagnosis; and severe fusospirochetal disease, which is probably incorrectly diagnosed more often than any disease in dentistry, must be differentiated from a number of other oral lesions. Some of these diseases are a source of potential danger to physicians and dentists themselves. Among these are actinomycosis, of which fungus is the infective agent (Fig. 4), and syphilis, in which the early lesions of chancre and

7. ***Oral cancer. Squamous epithelial cell carcinoma of the lip in a man, aged 56, which resulted from the chemical, thermal, and traumatic irritation of a pipe stem. The nodule was infiltrated and covered with crusts; it was completely painless. Early diagnosis and prompt treatment would have prevented such a serious condition.***

8. ***Tertiary syphilis (gumma). Front and lateral views of a gumma of the nose and upper lip. Rapid destruction of the cartilage, bony structure of the nose, and part of the upper lip occurred, producing this hideous deformity. Careful examination also revealed collapse of the entire third of the nose, sinking of the entire nostril, and rapidly spreading ulceration. The patient had been exposed to syphilis thirteen years before. Wassermann positive.***

mucous patches are infectious (Figs. 5 and 6). The early recognition of malignant lesions, too, is of great importance (Fig. 7). This is illustrated by the fact that cancer has jumped from sixth to second place as a cause of death since the beginning of the century. It is exceeded only by that large group of conditions recognized as "heart disease."[1]

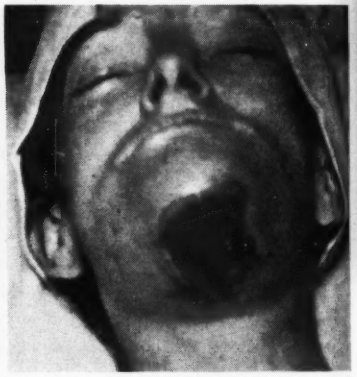
From an etiologic standpoint, lesions of the oral mucosa may be of local, focal, or toxic origin; they may have their source in congenital, febrile, or constitutional diseases, such as tuberculosis, malignancies, and syphilis (Figs. 8 and 9); or, they may be due to nutritional deficiency and debilitating disease (Fig. 10).

Origins of Antral Pain

The dentist must be able to differentiate between antral pain of sinus origin and that of dental origin. The clinical picture of the patient with maxillary sinusitis due to nasal infection differs somewhat from that of the patient with maxillary sinusitis of dental origin (Fig. 11).

[1]Masuda, B. J.: Cancer of the Oral Mucosa and Circumoral Areas, Am. J. Orthodon. & Oral Surg. **31**:730 (December) 1945.

9. ***Congenital syphilis. Hutchinson's teeth in a thirteen-year-old girl showing defective formation of the teeth due to congenital syphilis. The notched, crescentic cutting edges of the incisor teeth occurred because of hypoplasia of the enamel. The permanent molar teeth were also affected. Other manifestations present in this patient were: a positive Wassermann, interstitial keratitis, and some deafness.***

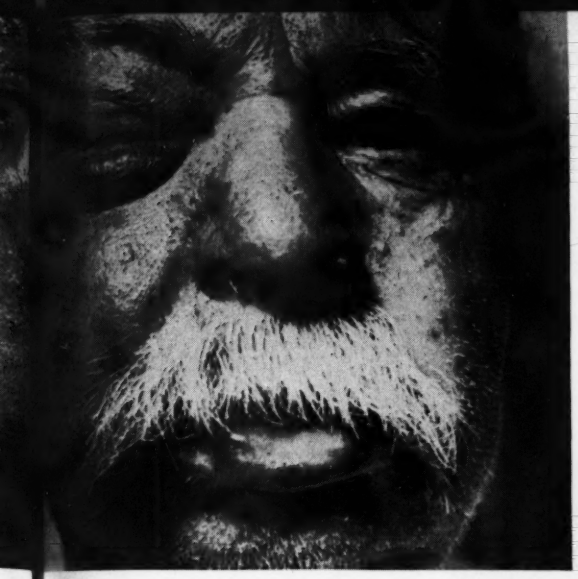


10. ***Gangrenous stomatitis (cancrum oris, noma). A thirty-year-old white woman complained of sore gingivae following the removal of an acutely infected lower incisor tooth. Twelve days later the submental region became swollen, indurated, and brown in color. A necrotic plug sloughed out, leaving a perforation and a condition of gangrene. This shows the patient the ninth day after the onset of gangrene. Intravenous injections of 130,000 Oxford units of penicillin daily for twelve days resulted in no improvement. Streptococcus septicemia developed followed by prostration, delirium, and death.***

Teeth—It has been estimated that about 20 per cent of all cases of chronic maxillary sinusitis have their origin in infected teeth.[2] The history of the patient with maxillary sinusitis due to dental infection includes these findings:

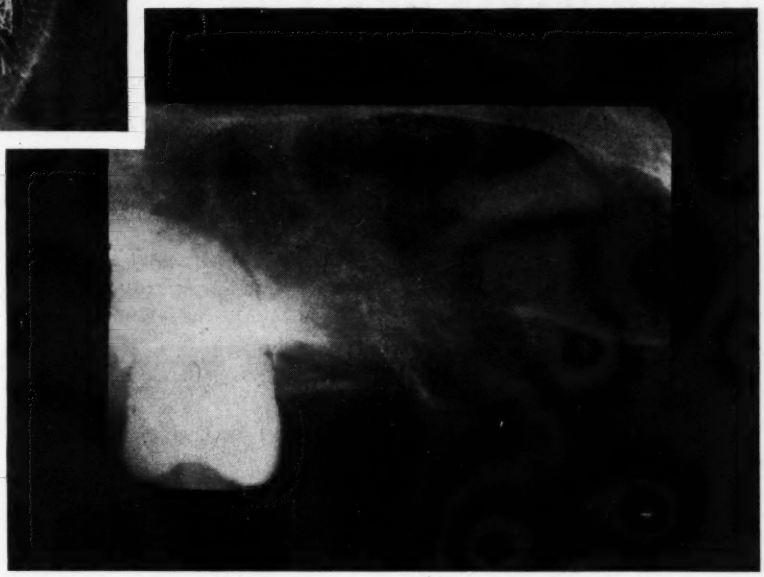
1. No evidence of nasal infection.
2. Dental disease or dental extraction.
3. Positive roentgenographic findings of dental origin (Fig. 11).

[2]McQuiston, R. J.: Maxillary Sinusitis of Dental Origin and the Management of Antral Fistula, Ann. Otol., Rhin. & Laryng. **54**:373-383 (June) 1945.



11. ***Acute maxillary sinusitis of the right side caused by forcing a molar root (shown in the roentgenogram) through the alveolar process into the sinus during extraction. The sinus contained frank pus which is shown by the cloudiness in the roentgenogram. Swelling of the malar region was accompanied by pain, headaches, fever, and general malaise.***

After the acute state had passed, a Caldwell-Luc operation was performed to remove the remaining root and pathologic debris from the sinus and to establish permanent drainage into the nose. (Careful diagnostic judgment must be exercised not to mistake this condition for an acute maxillary alveolar abscess or a maxillary sinusitis of nasal origin (Fig. 12).



12. ***Acute maxillary sinusitis of nasal origin. Diagnosis of this condition was made on the basis of a previous history of nasal infection, bilateral discomfort, pain and headache referred in the supra-orbital region; positive findings by roentgenography, transillumination of both sinuses, and profuse discharge. Free drainage of these infected sinuses was established through normal channels and the patient made a good recovery. Treatment of such cases is in the province of the otolaryngologist.***

4. Pain, usually confined to the sinus.

5. Discomfort unilateral (as a rule).

6. Scanty nasal discharge and foul odor due to localized bone necrosis.

Actinomycosis

Sinus—The history of the patient with acute maxillary sinusitis of nasal origin presents these findings:

1. Evidence of previous nasal infection.

2. No history of dental disease or extraction.

3. Positive roentgenographic findings of sinuses of nasal origin (Fig. 12).

4. Pain or headache usually referred to the supra-orbital region.

5. Discomfort bilateral (usually).

6. A profuse nasal discharge without (as a rule) an odor.

7. A pulpitis may or may not be present.

Comments

Differential diagnosis of lesions and diseases of the oral mucous membrane and circumoral region assures the planning of a sound method of treatment. It is, in my opinion, not only of diagnostic value to the dentist and physician; it is also of value in determining the etiologic factors underlying a systemic disturbance if it is present.

1930 *Chestnut Street.*

The ROOFLESS DENTURE

EDWARD A. REYER, D.M.D., Brooklyn

DIGEST

The formation of the borders is stressed in this technique for producing a roofless denture. Definitions which locate the borders in the mouth are given to clarify the technique of taking the preliminary impression and essential manipulative steps are described upon which depend the accurate results necessary for retention of the finished denture. The denture is processed with a full palate; then the palatal portion is cut out along the predetermined beaded outline.

THE ROOFLESS denture has yet to find a definite place in prosthetic dentistry. It will not be within the scope of this paper, however, to discuss the advantages or disadvantages of this type of denture base; suffice it to mention that the operator must choose his cases judiciously.

Careful examination of the mucosa will determine whether a mouth is suitable for a roofless denture. This examination should include a thorough test of all involved tissues for their degree of compressibility, one of the factors which will determine the retention of the final denture.

Materials

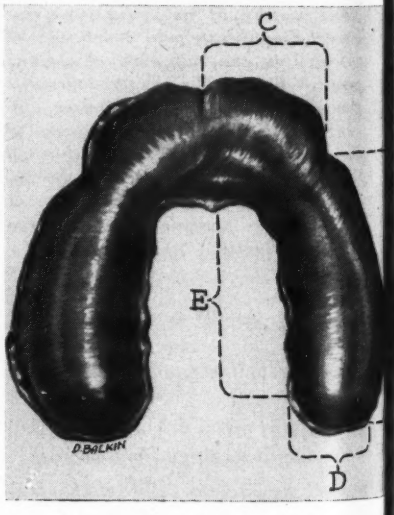
1. A nonresinous, high-fusing compound (Kerr's preferred), which sets quickly without the use of cold water in the mouth.
2. Black carding wax.
3. Blow torch.
4. Zinc oxide-eugenol paste.
5. A tray of suitable size. (This should have low-cut flanges, and the size should be such that the flanges do not extend more than one-eighth of an inch beyond the labial and buccal walls of the ridge.)

Border Nomenclature

1. The distobuccal border (A in Fig. 1) is formed by the superior constrictor muscle where it joins the buccinator to form the pterygomandibular raphe.
2. The buccal border (B in Fig. 1) is that portion of the denture located between the highest point of the distobuccal and the buccinator attachment located anteriorly near the cuspid line. This border is in contact with the buccinator muscle.
3. The anterior border (C in Fig. 1), or labial arch, is formed primarily by the orbicularis muscle. The left and right side are interrupted by the labial frenum.
4. The posterior border (D in Fig. 1) extends from the lowest portion of the distobuccal border medially across the pterygomaxillary notch to a point one-sixteenth of an inch beyond where the vault assumes its horizontal plane.
5. The palatal border (E in Fig. 1) then extends anteriorly to a point just slightly beyond the first crest of the rugae. This area is never definite, but must be determined according to its resiliency. By joining the left and right sides, the palatal border becomes continuous.

Impression Technique

Preliminary Impression—1. Soften two cakes of impression compound and mold them into a flat mass on the metal tray. Cool one-third of the tray side of the compound to prevent the



1. ***(A) Distobuccal border; (B) buccal border; (C) anterior border; (D) posterior border; (E) palatal border.***

2. ***Mucosa indicated with indelible pencil mark to be transferred to the baseplate.***

not pull down on the cheeks or lip; this will only tend to foreshorten the height of the borders with consequent loss of peripheral seal.)

2. The distobuccal border is formed when the patient's mouth is wide open. (This border, incidentally, is commonly neglected.) Its correct registration may be recognized as a depressed, flattened surface. No borders should be flamed more than one-eighth of an inch in depth.

3. The buccal border is now softened and then tempered before inserting the tray into the mouth. With the mouth muscles completely relaxed and the operator standing in front of the patient, the cheek (on side border is being trimmed) is distended slightly horizontally with the free hand, the thumb touching the inner surface of the cheek and the other fingers remaining on the outside. Bear a light inward or medial pressure of the cheek on the compound just below the height of the border to complete the roll.

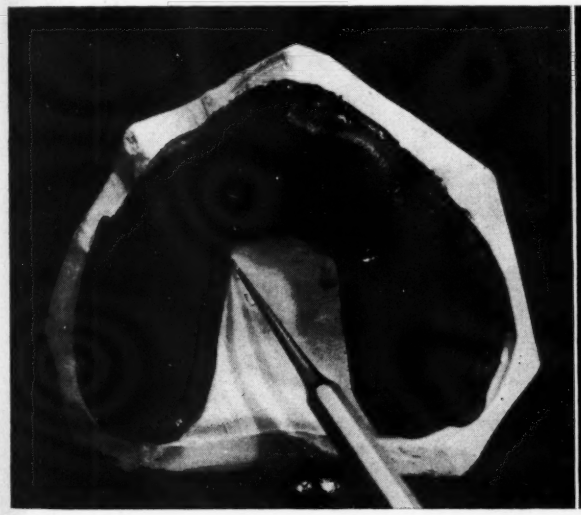
4. The anterior border is now flamed and brought into position in the mouth. With the index finger and thumb of the free hand, bring the left and right sides of the lip up in a puckering fashion and direct the pressure of the lip toward the ridge.

5. The frenum and buccinator attachments may be relieved by directing a pin-point flame on the impression in these areas and registering the tissues merely with a slight horizontal pull.

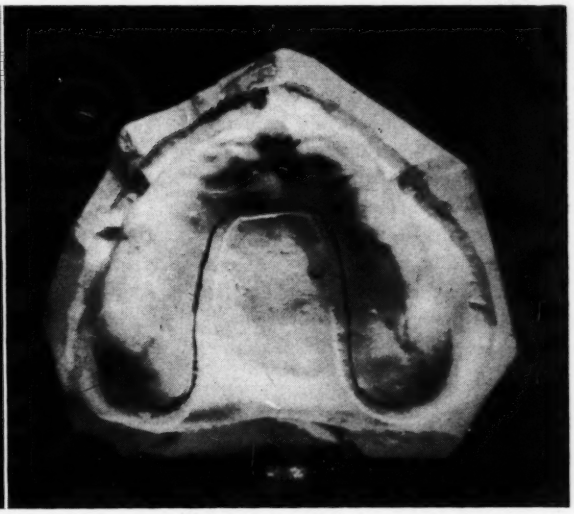
Before proceeding to the next step, the operator must be certain that at this stage there is perfect sealing. Do not depend upon the "wash" to correct border extensions.

"Wash" Impression—1. For a "wash" impression use a zinc oxide-eugenol paste of a thin consistency. Do not mar or change the original compound impression tray. A good compound impression is one which shows spots of compound through a "wash" impression. Pour a cast.

2. Adapt two thicknesses of baseplate material on the model, the borders of which are to be fully extended. (This tray will be used to test the amount of compression necessary for the retention of the final denture. If the impression has been carefully followed, the base tray will be found to be retentive with its full palate coverage.)



3. ***Baseplate, after palatal portion has been removed, being used as a template on model to trace outline with a sharp instrument.***



4. ***Shows approximate width of relief on model along the posterior and palatal borders. Note relief already made on model.***

compound from coming through the tray.

a) Take a snap impression that is overextended on all borders, registering the palate and ridge well.

b) Remove the impression from the mouth and chill it.

c) Cut off the excess width of the borders.

If the snap impression has been overextended, it is now ready for muscle trimming. (In trimming *do*

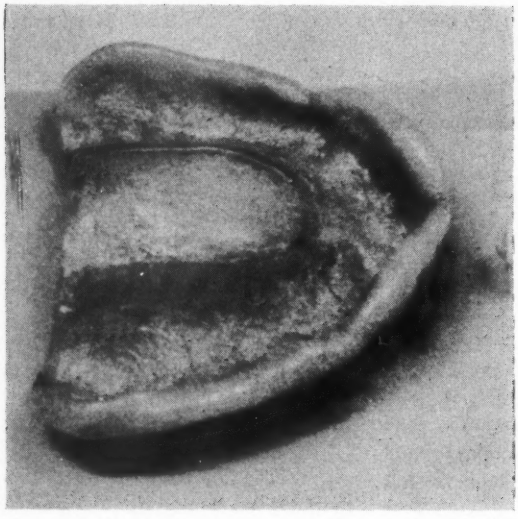
Marking Borders—1. Determine the posterior border for the finished denture by running an indelible pencil along the corresponding border on the base tray and transferring this

6. *Appearance of patient in relaxation with roofless denture in position.*

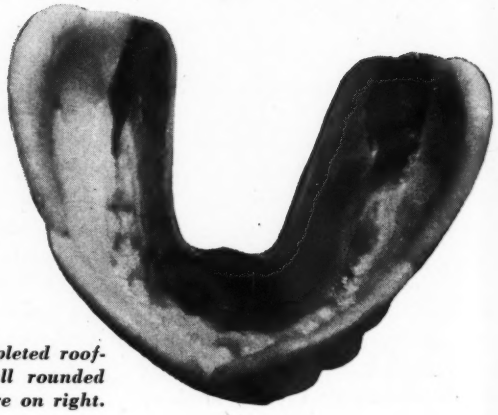
5. *Roofless denture in mouth showing palate uncovered.*

marking to the mouth by contact. (The indelible imprint on the mucosa should coincide with the hamular notch. A T-burnisher moving posteriorly over the ridge will locate this notch as a soft depression.)

2. Reverse the procedure and mark the palate with an indelible pencil just where the vault assumes its horizontal position (Fig. 2). Place the tray against this pencil line to obtain the registration. Complete the outline



7. *Denture shown with palate remaining intact until polishing is completed, to prevent warping.*



8. *Two views of the completed roofless denture. Note the full rounded peripheral borders in figure on right.*

of the tray with the posterior border to the anterior termination and join the two sides.

Carefully cut out the palatal portion of the tray to be discarded. By using the newly formed tray as a template, trace an outline on the model with a sharp instrument (Fig. 3).

Ascertaining Seal Compression—The next step is to ascertain the amount of compression required to seal the final denture.

1. Melt carding wax along the entire posterior and palatal borders of the tray and carry it into the mouth.

2. If sealing is not obtained on the first trial, add the necessary amount of wax to get it. (The thickness of wax on the tray is the approximate depth the stone model is to be relieved. The width of this relief is within the range of one-sixteenth of an inch over the posterior border and about one-eighth of an inch for the palatal borders.)

3. The relief should be graded evenly from the borders toward the ridge (Fig. 4).

Final Steps

1. Remove the carding wax and readapt the base tray to the model. Make certain the tray does not warp.

2. Any openings in the base tray are to be covered with wax to prevent leakage.

3. Retest for retention.

4. Increase the depth of relief on the model if there is not sufficient retention.

5. Do not proceed with the case until perfect retention has been obtained.

Comments

To obtain a successful case, the peripheral seal must be positive; all teeth must be set on the ridge for constant stability; functional balance of occlusion is a "must."

The finished denture, when removed from the processing flask, appears as a full palate denture (Fig. 7). The case is trimmed and polished this way in order to prevent warping of the denture base. When the base has been completely polished, the palate base may then be cut out along the indicated border relief (Fig. 8).

Conclusion

Inasmuch as the technique of impression-taking for a roofless denture is essentially the same as that for a conventional full denture, the roofless denture should not present any problems. Nevertheless, there are disadvantages which may cause some dentists to make unfavorable criticisms of the roofless denture. These criticisms are quite justifiable from the patient's point of view. They are:

1. An undetermined period of time may be required to create a perfect palatal seal for the proper retention of the denture after it has been inserted.

2. Relief for sore areas over the torus palatinus may be necessary from time to time.

I know of only two advantages of the roofless denture: (1) It is beneficial to patients with a neurotic antipathy to a full palate; and (2) thermal changes of foods eaten are sensed more uniformly by the patient.

238 *Kings Highway*.

Dietary Oxalate and Rats' Teeth

IT HAS been demonstrated that ingestion of solutions of various food acids (phosphoric, citric, lactic, sulfuric) causes considerable destruction of rat molars.

In feeding experiments on young white rats, investigators found that small amounts of soluble oxalate in the food or drink produced a hard deposit on the teeth of the animals, which grossly resembled human dental calculus. (The extent of this encrustation, which is presumably calcium oxalate, varied with the concentration of oxalate consumed and with the length of the experiment.) Because of this phenomenon, oxalic acid solutions did not etch the enamel of the teeth of rats, in contrast to the action of other common food acids (citric, lactic, phosphoric, sulfuric).

When oxalic acid or its sodium salt was present in the rat's food or drink, the decalcification of teeth which accompanied ingestion of phosphoric (0.055 per cent) and citric (0.20 per cent) acid solutions diminished or disappeared. Protection against the etching action of orange juice was afforded by a concentration of 0.1 per cent oxalate in the juice.

From Current Medical Literature, *Journal of the American Medical Association* 132:887 (December 7) 1946.

ESTABLISHING CENTRIC RELATION *in the Partly Edentulous Mouth with a Mandibular Positioner*

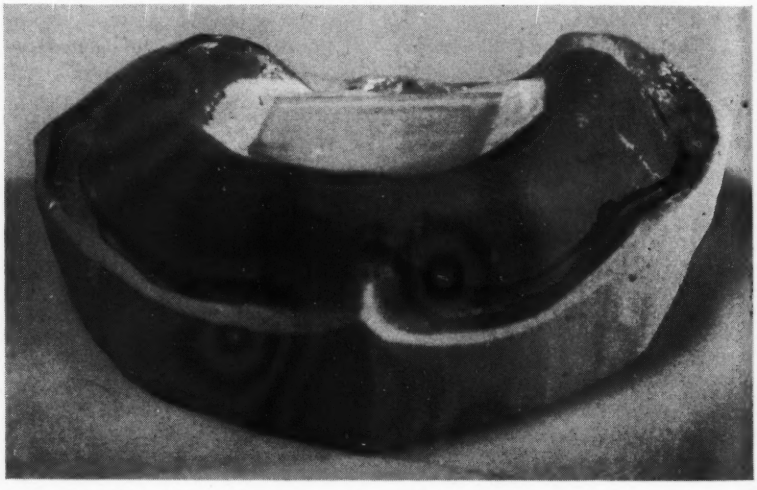
T. O'D. LEGGE, D.D.S., SUDBURY, ONTARIO

DIGEST

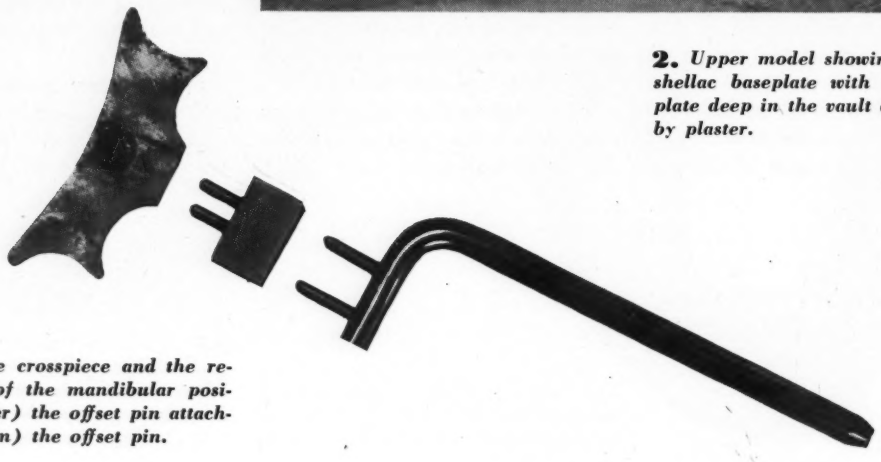
This article follows one in last month's issue on establishing centric relation in the fully edentulous mouth with a mandibular positioner. Detailed directions were given in the preceding article for making the Gothic arch tracing. Centric relation was also described and its function and importance discussed.

This month a modified technique is presented whereby the mandibular positioner, adapted for the purpose, may be used to establish centric relation in the partly edentulous mouth.

ESTABLISHING centric relation in the partly edentulous mouth is often quite difficult; it presents the same element of uncertainty that exists in attaining this relation in the fully edentulous mouth. The Gothic arch tracing having been accepted as a reliable means of ascertaining the horizontal dimension of centric relation, the mandibular positioner may be used for this purpose. The offset pin attachment is removed and only the crosspiece with the recording pin is used in the technique (Fig. 1).



2. *Upper model showing a stabilized shellac baseplate with the recording plate deep in the vault and supported by plaster.*



1. *(top) The crosspiece and the recording pin of the mandibular positioner; (center) the offset pin attachment; (bottom) the offset pin.*

Procedure

In the case of a full upper denture and natural lower teeth, establish centric relation by following this procedure:

Upper Model—1. Procure models.

2. Construct baseplates.

3. Dust models with talcum powder. Adapt a shellac baseplate to the upper model.

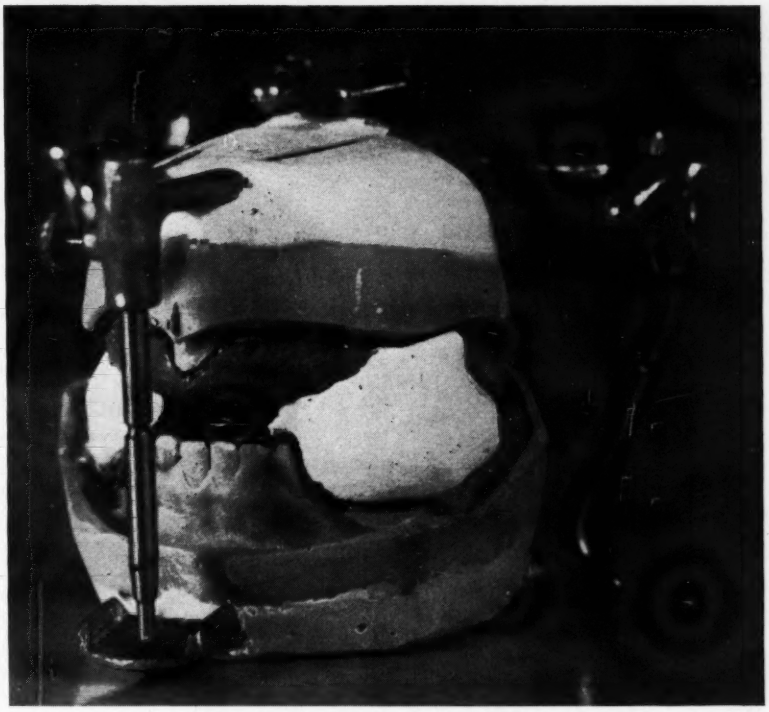
4. Grease model with vaseline. Line the baseplate with zinc oxide paste.

5. When the paste has set, remove baseplate and trim away excess paste.

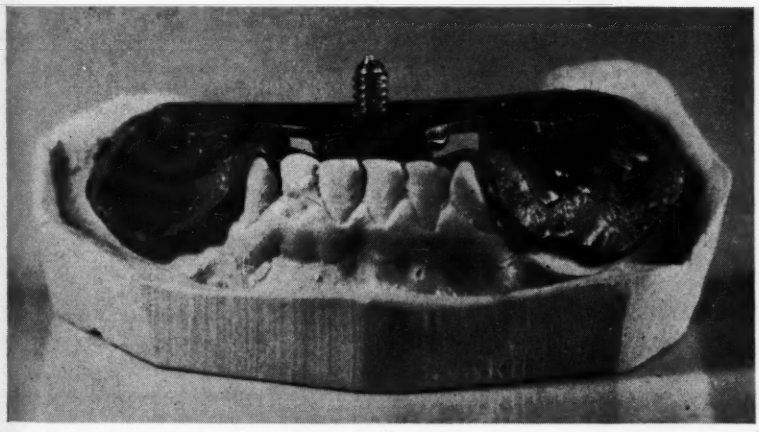
6. Flow carding wax around the periphery of the baseplate.

7. Attach the recording plate to baseplate deep in the vault with sticky wax.

8. Flow plaster under the recording plate to support it.



4. ***The case mounted in centric relation on a Gysi simplex articulator.***



9. Trim excess plaster and allow it to set (Fig. 2).

Lower Model—1. With plasticine, fill in pronounced undercuts on the lingual and the buccal of the bicuspids and molars.

2. Dust talcum powder over the model. Adapt a shellac baseplate to the occlusal, buccal and lingual surfaces of the molars and bicuspids. Cover only the lingual surface of the anterior teeth (Fig. 3) and reinforce this section with wire and compound.

3. Grease the model with vaseline. Line baseplate with zinc oxide paste.

3. ***Lower model showing a stabilized shellac baseplate with the crosspiece of the positioner attached to the occlusal surface.***

4. Flow carding wax around the periphery of the baseplate.

5. Place baseplate on model and place crosspiece of positioner on the occlusal surface of the baseplate; seal with sticky wax.

Gothic Arch Tracing—1. Place upper and lower baseplates in the patient's mouth and adjust the recording pin for the vertical space and also for center.

2. Remove upper baseplate and smoke stain the recording plate.

3. Return upper baseplate to mouth and have the patient record a Gothic arch tracing.

4. Remove upper and lower baseplates from the patient's mouth.

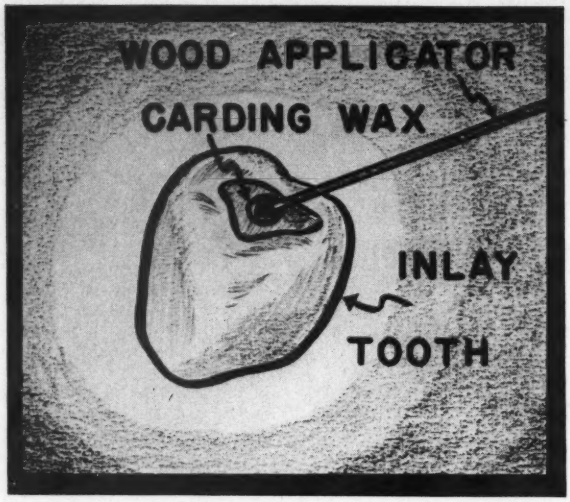
5. With a round bur number 4, make a hole at the apex of the tracing.

6. Return both baseplates to the mouth. The patient closes in retrusion and the pin engages the hole.

The patient holds this position while plaster is inserted between the upper and lower baseplates and against the buccal surfaces of the baseplates. When the plaster has set, the upper and lower baseplates are removed from the mouth, locked in centric relation. The case is mounted in centric relation on a Gysi simplex articulator (Fig. 4).

With properly constructed baseplates, it is obvious that the positioner can be used to establish centric relation in any combination of natural and denture teeth in the partly edentulous mouth.

Stevens Building.



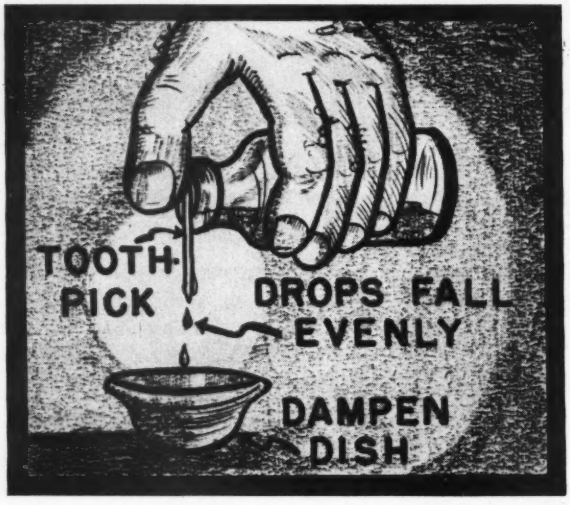
1

Clinical and Laborato

Inlay Carrier

H. W. Everett, Emporia, Kansas

1. When cementing an inlay, use a small piece of carding wax on the end of a wooden applicator. Warm the wax, pick up the inlay, and carry to place in the tooth. When the cement is set, the wax is readily removed from the inlay surface.

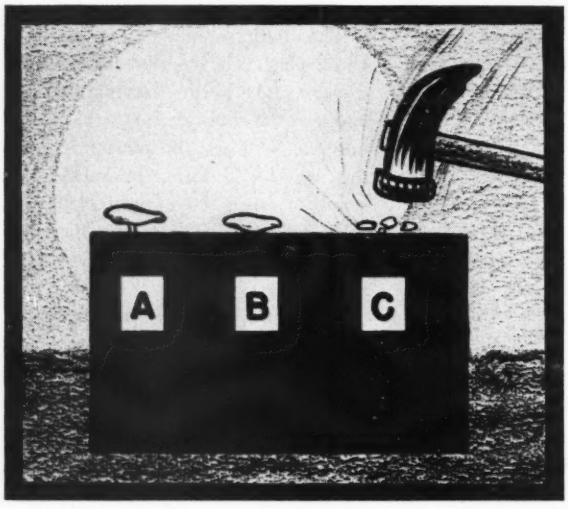


2

An Easy and Efficient Method of Pouring and Measuring Liquids

May Randolph, D.A., Hollywood

2. This method facilitates pouring liquids drop by drop. A round wood toothpick is held with thumb over the mouth of the bottle. The drops drop easily and under control without smearing or wasting the liquid.



3

Salvaging Precious Metal Pins from Porcelain Teeth

A. W. Guse, D.D.S., Bryant, South Dakota

3. A block of lead or a bar of tinner's solder is used as an anvil. The facing or tooth carrying the precious metal pins is placed on the metal block with the porcelain upward (A). The pins are driven into the soft metal (B). The porcelain is shattered with the blow from the mallet (C). The precious metal pins are imbedded in the soft metal and are recovered with a pair of laboratory tweezers.

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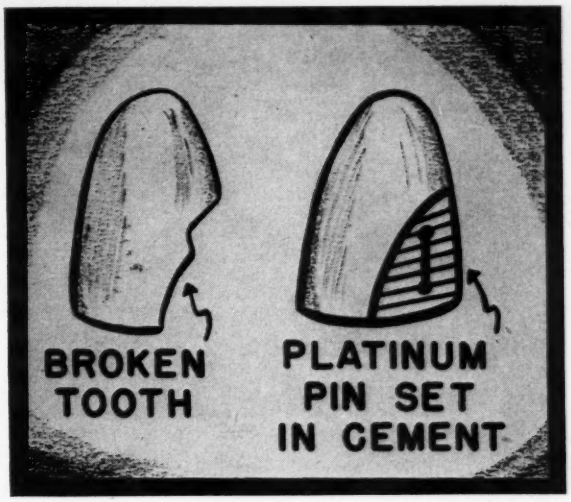
...GGESTIONS . . .

Strengthening the Incisal Angle Restoration of Silicate

Ernest J. Smith, D.D.S., Ipswich, Massachusetts

4. The cavity is prepared in the usual manner. The silicate is mixed according to directions and placed in the tooth. While in the plastic stage, a small platinum pin is submerged in the cement. This metal pin acts as a reinforcement in the same manner as steel in concrete.

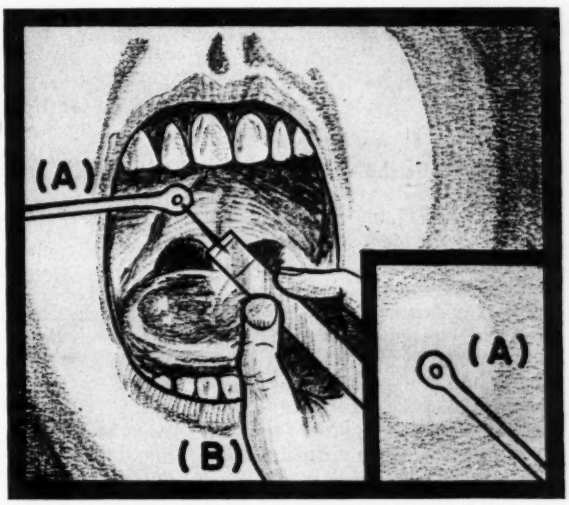


4

A Pressure-Making Instrument for Use in Local Anesthesia

Oscar H. Volpe, D.D.S., Montevideo, Uruguay

5. A dental instrument (A) is perforated in the center. In making palatal injections, the instrument is held in the left hand and pressure is exerted. An area of eschemia is produced. The injection needle is inserted in the hole and the solution is deposited. The pressure against the palatal mucous membrane creates a numbing sensation that causes the injection to be free from pain.

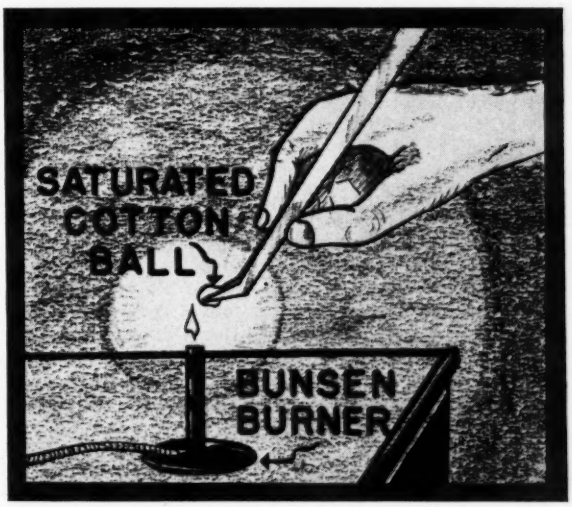


5

A Wax Burnisher in Direct Inlay Technique

Harry Snitow, D.D.S., New York

6. It is desirable to burnish the wax pattern. A ball of cotton is held in a pair of college pliers. The cotton is saturated with water and held over a Bunsen flame. When the water begins to boil, the cotton ball is withdrawn from the flame and the wax pattern is burnished. The gentle heat will give a smooth finish to the pattern. The tooth is not irritated by the heat.



6

suitable illustrations; write a brief description of the technique involved; and jot down the advantages of the technique. This shouldn't take ten minutes of your time.

Turn to page 102 for a convenient form to use.

Send your ideas to: Clinical and Laboratory Suggestions Editor, DENTAL DIGEST, 708 Church Street, Evanston, Illinois.

In your ORAL HYGIENE this month

Who Makes "Black-Market" Dentistry?

Here's a different viewpoint on the subject of "black-market" dentistry! An experienced laboratory man says dentists aren't blameless by any means—that they must accept at least partial responsibility for the flourishing dental practices of the unethical laboratories. You will want to read this article, for it's bound to be widely discussed.

★ ★ ★

Did you ever think of becoming a "sky-planter" as a change from dentistry? Doctor Lytle S. Adams did, and, after retiring from active practice, began an even more active life seeding vast tracts of land from the air. Doctor Adams is the inventor of the airmail pickup device, and of a special seed pellet which can be "shot" into the ground. The vision and ingenuity of this dentist may prove as helpful in fighting famine as it was in speeding up airmail service.

★ ★ ★

"Mother Doesn't Know Best," says Doctor Walter C. McBride, and proves it in a humorous but penetrating article. Perhaps you'll find your personal *bete noir* described here—together with directions for handling same. It might be wise to let some of the problem-mothers read this article.

★ ★ ★

Doctor Albert G. Pietsch—whose articles are always interesting to Oral Hygiene readers—writes this month on the ever-growing need for closer co-operation between organized dentistry and medicine in solving professional problems. One of Doctor Pietsch's wise and quotable conclusions: "Surely practitioners of the health professions have the ability to think like men of action, and to act like men of thought."

Does your reception room look a bit shabby? Are you wondering what to buy, what to keep, and whether or not to redecorate the whole office? A series of articles beginning in this issue will help you—whether you like modern or traditional treatment, and whether you wish to change the room completely or just do some painting and renovating. The articles are written by members of the American Institute of Decorators and give practical, sensible, detailed advice which should be of great help to any dentist who is planning to improve his reception room.

★ ★ ★

"Present-Day Dentistry in China"—through the eyes of Doctor Lester G. Glick who has just recently returned to this country—is an interesting story of "herb doctors," "quacks," missionary dentists, and a handful of Western-trained native dentists. You will be interested in this first-hand picture of dental practice in China today.

★ ★ ★

"Why Don't You Give Interesting Speeches?"—Perhaps you do, but, even so, you will enjoy Irving G. Lee's article on public speaking. To one whose brain and body numb at the thought of making a speech, this article is invaluable. To the experts, it is useful as a "reminder"—for even the experts sometimes err.

★ ★ ★

In addition to these seven articles, all of the regular departments wait for your spare-moment reading. Short, varied, and interesting, they present the humor, philosophy, technical data, news and views that complete the pattern of dental life. There's even a technical quiz to test your memory and knowledge.

Contra-Angles

About Face

I have been reading about what an anthropologist, Earnest A. Hooton of Harvard, thinks of man's face. He isn't happy about the whole thing. He expresses himself in these mournful words:[1] ". . .man appears to be an animal that has entered upon a terminal and decidedly retrogressive evolutionary course as respects not only his teeth, jaws, and face, but also his brain case, its contents, and many other body parts. Brains, as well as jaws, seem to be shrinking. This general evolutionary decline is certainly attributable in part to functional atrophy—to the fact that man has tried to substitute the use of machines and gadgets for the proper exercising and performance of work by his own organism.

"He uses millstones for the grinding of his cereal food, choppers for the trituration of his animal food, chemists for the production of food that requires no chewing whatsoever, and then wonders why his face, which is mostly a setting for his masticatory apparatus, shrivels and warps. He cuts off the tails of a few generations of unhappy mice and, because this mutilation is not inherited, jumps to the conclusion that atrophy of function in parents cannot affect the development of those disused parts in offspring, without pausing to survey the infinity of palaeontological evidence of gradual, then accelerated shrinking, and final disappearance of such obsolescent body organs, irrespective of their advantage in the struggle for survival. He patches up and preserves deteriorated human organisms and by the bounty of charity encourages them to proliferate and

[1]Hooton, E. A.: The Evolution and Devolution of the Human Face, Am. J. Orthodont. & Oral Surg. **32**:671 (December) 1946.

perpetuate their germinal defects and their sheer evolutionary pauperism. He tries to get along in the world without mental or physical effort and if he is capable of such healthful exertion, expends it all too often in stupidly helping the survival of those who ought not to survive, thus making a bad evolutionary matter much worse.

"Let the orthodontist contemplate the Biblical adage: 'The fathers have eaten a sour grape, and the children's teeth are set on edge.' This may not be good biology, according to Weismann, but it should offer some solace to the dental scientist who is bravely attempting to reverse the course of human evolution. If he fails, it at any rate provides him with an alibi."

Doctor Hooton, not a merry or optimistic-sounding fellow, seems to think that our faces are undergoing retrogression. He doesn't have the answers to the etiologies of malocclusions but he feels that our facial retrogression has both evolutionary and environmental components. He wisely takes no part in the debate between nature and nurture, between heredity and environment; he leaves such debates to the high school sophomores who know all things.

People can inherit malocclusions as they inherit other physical characteristics. Family strains show "weak jaws" or "protruding jaws" over generations just as they show blue eyes, obesity, red hair, or flat feet. Malocclusions may be corrected by skillful orthodontic treatment but the same kind of malocclusion may crop up in the child or the great grandchild of the patient treated. Or a parent with a superb arch development and an excellent occlusion may produce a child that has to be hurried off to an orthodontist at an early age. This condition, according to the geneticist, represents an outcropping of a recessive trait; something that the child picked up from the ancestral germ plasm and developed to a full malocclusion in his own right.

Nothing can be done to weed out bad facial traits by selection. Men and women who contemplate marriage do not go around with calipers or dividers, measuring the faces of their loved

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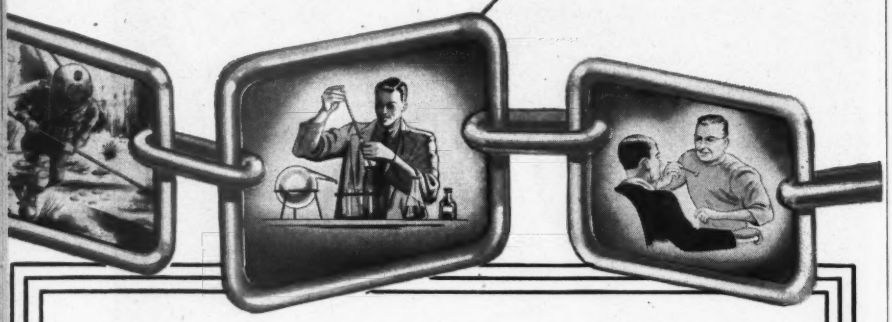

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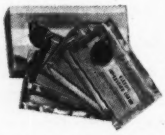

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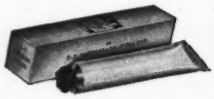

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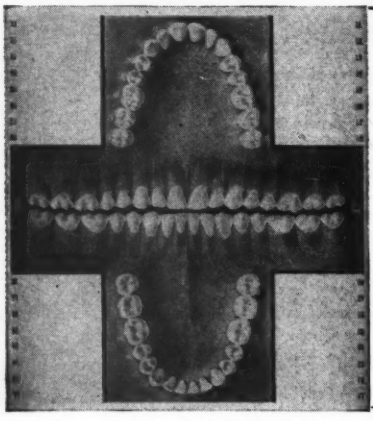

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one's parents or grandparents. Nor do they check the dental history of their ancestors. Love blinds the biologic history-taking and sparks up the biologic urge to reproduce even if the progeny may be little guys with retrogressive faces. We will never get anywhere with scientific breeding applied to people. So, we might as well reconcile ourselves to the fact that we can never stamp out malocclusions by selective matings. People do their mating with other ideas than that in mind!

On the environmental side, Doctor Hooton believes that some malocclusions are "the result of infection, of atrophy of function of the masticatory apparatus arising from dependence upon soft cooked food, of subnormal bone development due to deficiency diets, or of all these factors combined." The gist of this is that modern man has such an easy time acquiring his food that he picks and chooses what he pleases (often with disastrous nutritional results). Modern man is not required to labor by hard chewing. He swallows his mushy food and washes it down with fluids that are usually lacking all nutritive value. You wouldn't become a circus strong man by lifting feather pillows. Why expect strong facial muscles that help mold the arch form if these muscles have no work to perform?

The newer orthodontists and prosthodontists talk more and more of faces and less and less of teeth. Certainly teeth are important but they are set in faces and faces are the things we show to the world. Faces are sometimes people's fortunes and often their misfortunes. Whatever we can do with our technical skills to bring harmony and beauty and repose to the human face represents energy well expended. When we dentists learn to talk more about faces, we will put our services on a higher plane of acceptability for our patients.

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house at being a newspaper editor and publisher, for the title, "Freedom is More Than a Word." Mr. Field wrote a book on this subject or he had it ghost-written for him. In journalism, every responsible person should have his day in court and his chance to be heard. Some time ago we published something in CONTRA-ANGLES that one of our readers takes proper exception to. Here is a letter from Doctor L. A. Lucas, 210 West Commerce Street, Oklahoma City, on the subject:

"In your column CONTRA-ANGLES[2] it was stated that freedom of speech is a great thing and that we all have a tendency to overdo it. In that respect I heartily agree with you, especially in your treatment of that abused subject, the pulpless tooth.

"Assuming for the sake of discussion that the late President Roosevelt[3] had a pulpless tooth, would you be insinuating that its presence indicated an inferior grade of dentistry? If it did, such practice should be condemned; but you have neglected to make any distinction between 'poor root canal therapy' and 'good root canal therapy,' and therein lies the real issue for discussion.

"Let us review the status of the pulpless tooth as it is viewed today by some noted authorities on the subject:

1. According to Edgar D. Coolidge, B.S., M.S., D.D.S., in his text-book, CLINICAL PATHOLOGY AND TREATMENT OF THE DENTAL PULP AND PERIODONTAL TISSUES,[4] the dentine might be considered as a supporting tissue for the pulp with its protoplasmic processes encased in hard tissue. After the root of the tooth is fully developed, the tooth may perform its normal masticatory function without the pulp, since the vascular supply of the tissue surrounding the root is not disturbed by the loss of the pulp. Neither is the character of the dentine and enamel greatly altered by the pulp. However, biologic changes effecting repair by the formation of secondary dentine cannot take place after the pulp is lost. Thus the tooth looses a part of its organic connection with the body when the pulp dies.

"Infection entering the pulp progresses toward the apical foramen and, if either the micro-organisms or their poisonous products pass through the apical foramen, the surrounding periodontal tissue becomes inflamed. It is one of the most important of all dental services to protect and preserve the vitality of the dental pulp wherever it is possible, especially in teeth where the roots are not fully developed. But a pulpless tooth is not a 'dead tooth' as it is often called; it is simply a functioning tooth without a pulp. It is the periodontal tissue and its bony support that determines the life and usefulness of a tooth.

Elsewhere in his book, Doctor Coolidge has shown conclusive evidence of what we may expect from 'good root canal therapy.'

2. In ORAL PATHOLOGY[5] by Doctor Thomas J. Hill are fine engravings showing complete healing of the pulp-

[2]Ryan, E. J.: Contra-Angles, THE DENTAL DIGEST 52:570-572 (October) 1946.

[3]Ibid., pages 560-570.

[4]Coolidge, E. D.: Clinical Pathology and Treatment of the Dental Pulp and Periodontal Tissues, Second Edition, Philadelphia, Lea & Febiger, 1946.

[5]Hill, T. J.: Oral Pathology, Third Edition, Philadelphia, Lea & Febiger, 1945.

*

. . . . . WOMAN PATIENT

Neglect of her teeth from childhood cost this woman all of her lower posteriors, and she had been wearing a wrought bar lower with wire clasps on the cuspids. The right cuspid abutment was loosened by the excessive strain and had to be extracted, leaving only five lower anteriors, left cuspid to right lateral.

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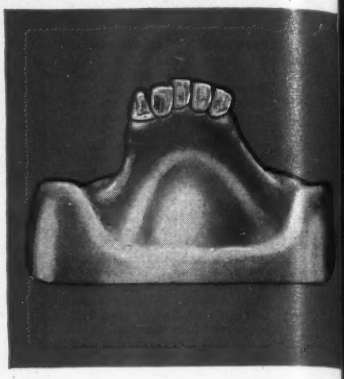

The original lingual bar lower failed because the wire clasps with only buccolingual grip could not work successfully on this free-end saddle case. Such clasps have no distal retention to hold the saddles against the ridge and furnish very little bracing, either for the appliance or the abutments. The resulting instability caused excessive strain and eventual loss of the right cuspid abutment.

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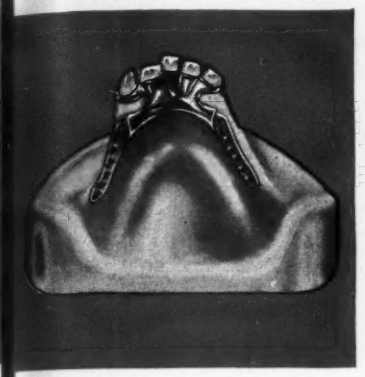

The Ney Surveyor System solved the problems presented by this case by designing it with back action clasps on the left cuspid and right lateral, supplemented by a continuous lingual bar over the cingulum of the anteriors. The back action is basically a mesiodistal grip clasp with good bracing and distal retention to hold the free-end saddle securely against the tissue.

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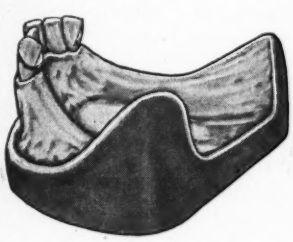
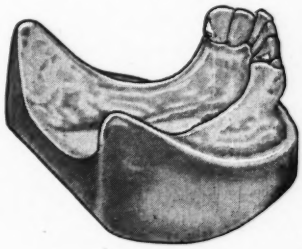


LEFT BUCCAL



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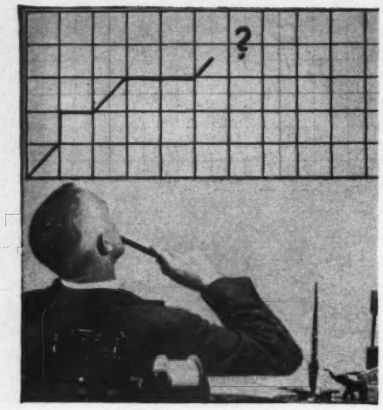
3. One will also find this statement in HISTOPATHOLOGY OF THE TEETH AND THEIR SURROUNDING STRUCTURES by Rudolf Kronfeld, B.S., M.D., D.D.S.:[6] 'If a living pulp is removed, the chances for undisturbed healing are the same as those in any other properly performed dental operation.' The entire book makes good reading. Fine engravings of complete healing are to be noted and the fact that, according to Doctor Kronfeld, these extracted teeth were free from inflammation.

4. From the textbook ROOT CANAL THERAPY[7] by Louis I. Grossman, D.D.S., Dr. med. dent., I quote: 'At the present time there is no reliable test to indicate the existence of focal infection and certainly no test that can single out a tooth and incriminate it as a focus of infection.'

5. An interesting report of the research work of Robert G. Kesel, M.S.,

[6]Kronfeld, Rudolf: Histopathology of the Teeth and Their Surrounding Structures, Second Edition, Philadelphia, Lea & Febiger, 1939.

[7]Grossman, L. I.: Root Canal Therapy, Second Edition, Philadelphia, Lea & Febiger, 1946.



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D.D.S., on the bacteriologic aspect of the pulpless tooth reveals the following: Apicoectomy was done under sterile conditions on teeth which had been subjected to 'good root canal therapy' and around which the tissues appeared normal from at least two different angles on the roentgenograph. The roots were then pulverized and cultured. So far, all such teeth have been negative.

6. At the first meeting of the American Association of Endodontists about twenty-five slides were viewed showing complete healing in 'good root canal therapy' which had been done over a period of years. These findings have also been confirmed by other investigators.

7. Balint Orban, M.D., D.D.S., author of ORAL HISTOLOGY AND EMBRYOLOGY[8], is also editor of the *Journal of Endodontics*. He is a staunch defender of root canal therapy and from his scientific approach he knows what one can expect from good endodontia.

8. Additional information of interest on this subject may be obtained from textbooks written by: Doctors R. G. Ellis, W. Clyde Davis, L. R. Cahn, W. C. McBride, and J. L. T. Appleton.

9. I happened to save an editorial published in your magazine some time ago[9] discussing foci of infection and quoting the findings of Russell L. Cecil, eminent internist, Professor of Clinical Medicine at Cornell University Medical College. It states that in his opinion the theory of focal infection has been greatly overplayed in the last twenty years, almost to the extent of becoming a medical fetish. He made the prediction that the next twenty years will see many more teeth and tonsils left in situ. His evaluation is best stated exactly in his own words: 'We have gained a lot of experience from our journey over the bypaths where we promiscuously plucked all the removable little organs. Now it is time for us to get back on the main road.'

"In regard to the report on President Roosevelt's dental flareup in No-

[8]Orban, Balint: Oral Histology and Embryology, St. Louis, C. V. Mosby Company, 1944.
[9]Ryan, E. J., The Editor's Page, DENTAL DIGEST 47:23 (January) 1941.

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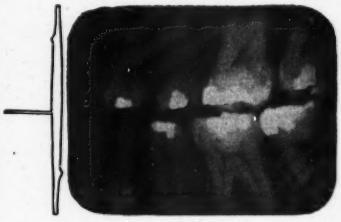

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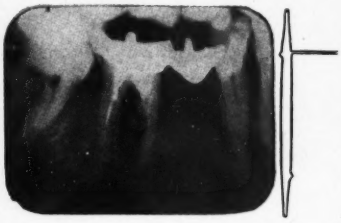

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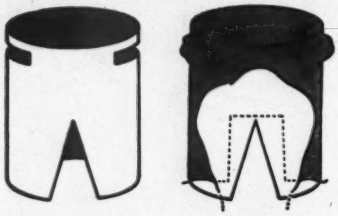

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vember 1937, it seems unreasonable to assume that the President's dentist was trying to save the tooth by doing root canal therapy. Due to the President's age and the large area involved, the condition seems more likely to have been a lateral or pyorrheal abscess. From your deductions that a dentist is not justified in 'temporizing' with oral conditions when one possesses such a background of diposition to dental infection, one must assume that you think all of President Roosevelt's teeth should have been extracted. Is that true preventive medicine?

"These outstanding opinions and facts, Doctor Ryan, have caused me to be a firm believer in root canal therapy. I use it in my practice; I believe in its future; and I will defend it to the last ditch, as I believe it has its place in progressive dentistry."

We would like to encourage more readers to disagree with us. There is a danger that any editor may develop quite innocently the feeling that he is an oracle of sorts. He sits back and pontificates without hearing from the opposition. If, from time to time, someone doesn't call him and disagree with him, he can easily enough develop delusions of grandeur. What makes a human society, what makes science, what makes a good government, are honest differences of opinion honestly and vigorously expressed. So here is an invitation to all readers: Anytime there is anything in this publication that you do not like, please speak up.—E. J. R.

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(*See pages* 86 *and* 87)

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Vitamin Deficiency and Neurosis

INASMUCH AS events in the psyche initiate morbid conditions in the body, it is natural to surmise that the reverse might also be true: that events in the body influence the psyche. The interplay of psychologic and pathologic facts, theories, and methodologies consitiute the developing field of psychosomatic medicine.

Observations on Mental Symptoms

Casal, who first described pellagra in the 18th century, recognized the mania, depression, and confusion which is an important constituent of that syndrome. From the finding that these mental disorders responded well to vitamin therapy, a large volume of literature has developed. Abundant proof has been marshaled therein to show that various malfunctions and emotional disturbances arise from vitamin deficiencies. Furthermore these not-too-tangible emotional sypmptoms may actually be the only manifestations of a deficiency state.

Investigative studies have shown the effects of the deprivation of vitamin B complex on the personality. The following two studies have to do with a deficiency of a single component of the B complex—thiamine.

1. The effect of induced thiamine deficiency upon the behavior of a group of eleven women in a mental institution was studied. After the diet had been restricted for two or three months, marked changes in the personalities of the women became manifest. Formerly gentle and cooperative, they became quarrelsome, irritable, depressed, and apprehensive. They lost manual dexterity, were confused in thoughts and memory, and developed various somatic symptoms. Two of the women threatened suicide.

2. A recently reported investigation utilized eight normal young men to assay the effects of thiamine deprivation upon personality traits. The experiment was divided into four consecutive periods:

a) A 41-day standardization period.

b) A 161-day period of partial restriction of thiamine, riboflavin, and niacin.

c) A 23-day period of acute deficiency of these vitamins.

d) A 10-day period of thiamine supplementation.

Half of the men rceived placebos and constituted the controls; the other half received the experimental diet. Their environment, physical work, and test regimens were rigorously standardized. They were tested before the experiment commenced, at frequent intervals during the experiment, and after it was completed.

All tests revealed that during the period of partly restricted B complex intake, the men showed *no significant changes* in the status of well-being and adjustment. Certain tests did reveal slight deteriorative changes during this period.

The most striking results were observed during the period of acute deficiency. Symptoms included: "blueness," sluggishness, tiredness, and loss of appetite; depression and hysterical features. The subjects were indistinguishable from many neurotic patients. The Rorschach test revealed a loss of spontaneity and an increase in tension as the subjects went through the period of acute vitamin deficiency. These various "personality" symptoms were cleared up by supplementation of the diet of the deficient subjects with thiamine alone.

Comment

While these experiments illustrate but a small segment of the relation of vitamins of the B complex to health, that segment is very important. When one realizes that by the deletion of one chemical compound—thiamine—from the diet, a person can be made to think thoughts and feel stimuli which under adequate dietary conditions he would not think or feel, then the potentially far-reaching social significance of this work is apparent.

—From *What's New* 106:8-9 (September) 1946.

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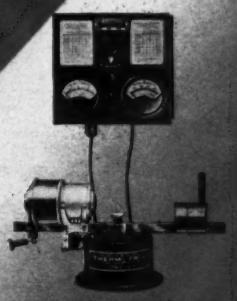

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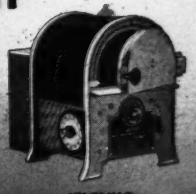

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